Maryland Tributary Teams

Annual Report 2000

Maryland Tributary Teams

...helping to reduce nutrient pollution and restore the Chesapeake Bay, its rivers and streams.

Dear Fellow Marylanders,

On behalf of Maryland's 10 Tributary Teams, we would like to express our appreciation for your interest in our efforts to protect the Chesapeake Bay watershed. The Tributary Teams are a valuable and effective partnership between federal, state, and local governments; businesses; citizens; farmers; and educators to restore and enhance the environmental health of Maryland's tributaries and the Chesapeake Bay. We invite you to join one of our Teams and become one of the more than 350 people who are helping us realize these goals.

Reducing nutrient pollution is an enormous task. Almost every human-based activity generates nutrient pollution, and the broad scope of our work reflects this wide-ranging impact. After reading our 2000 Annual Report, we think that you will have a better idea of the scope and breadth of our program as well as an understanding of the many dedicated people who drive our restoration and protection efforts.

The Tributary Teams were formed and appointed by Governor Parris N. Glendening in 1995. Each year since then, our list of accomplishments has grown impressively. This past year, our Teams played a key role in the development of the Chesapeake 2000 Agreement and in Maryland's Chesapeake Bay Partnership Agreement. We participated on task forces, in policy formation, and in the development of executive orders. We helped build oyster bars, plant trees, conduct public awareness campaigns, and develop educational documents. We spoke at public meetings and clubs, testified before the legislature, and met with local elected and state officials. Our charge to reduce nutrient pollution led us to focus on "green" power and energy efficiency, stormwater management, septic systems, and federal and state pollution prevention programs.

Our Teams have worked hard toward a collective goal, and we believe that our efforts will help to restore and protect our environment. The new Bay Agreement spells out a challenging array of commitments that goes beyond reducing nutrients. This provides an unprecedented opportunity for Maryland's Tributary Teams to renew their commitment, build on past successes, and help shape the future. To our fellow Team members, partners, and participants, we thank you, and to those of you who are observers, we invite you to join us as we continue to make a difference in Maryland.

Sincerely,

Craig Zinter
Chair, Choptank Tributary Team

Phil Hager
Chair, Lower Eastern Shore Team

Ginger Ellis
Chair, Lower Western Shore Team

Bob Boxwell
Chair, Lower Potomac Team

Edward Graham
Chair, Middle Potomac Team

Jack Anderson
Chair, Patapsco/Back River Team

Mary Lorsung
Chair, Patuxent River Commission

Alan Girard
Chair, Upper Eastern Shore Team

Craig Hartsock
Chair,Upper Potomac Team

Charlie Conklin
Chair, Upper Western Shore Team

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The Year in Review

The year 2000 was a period of new agreements and new initiatives for the Chesapeake Bay and its watersheds. During this year, the Chesapeake 2000 Agreement and Maryland's Chesapeake Bay Partnership Agreement were signed. Together, these far-reaching agreements frame the commitments that local and state governments need to restore and protect the Bay and its watershed. Nothing could have prepared the Teams for the road ahead better than the effort that they put forth to review and provide direction for these new agreements. It was the perfect opportunity to take stock of where the Teams have been and where they are headed.

In the past year, restoration moved to the forefront of all activities as the Teams implemented a variety of projects, including tree grow-out stations, riparian buffer and BayScapes planting projects, and oyster bar construction. Not only did these activities help restore habitat and ecosystem functions, they also served as important public education forums.

The Teams have long stressed that public education is the key to successful watershed restoration and protection, and during 2000, they led by example. Wade-ins, fish-ins, and dip-ins have evolved into one of the Teams' most successful public education efforts and summer traditions. All of the Teams hold such an event in their watershed each summer, and every year these events have grown to include more citizens, organizations, and elected officials. These events engage casual observers – the main target – and educate them about their watershed, their local water quality, and the Bay.

Reaching large population sectors with the Team's message continues to be challenging. The Team's ability to leverage its knowledge about the environment with the distribution capacity of a partner, like *The Baltimore Sun*, has greatly aided the effort to reach large audiences. This year, several Tributary Team members participated on the Cross-Team Public Outreach Workgroup to develop an insert for *The Baltimore Sun* that addresses Smart Growth. The booklet, entitled "Picture Maryland – Where Do We Grow from Here?" will reach more than one million people when it is distributed with the newspaper on Earth Day 2001.

Armed with a diverse expertise, the Teams present a clear and informed voice for policy reform. During 2000, the Choptank and Lower Eastern Shore Teams worked with Eastern Shore Public Drainage Associations and other stakeholders to establish the Public Drainage Task Force and negotiate a balance between the needs of farmers and the needs of the environment. In a meeting with Governor Glendening on May 22, 2000, the Teams pushed for stormwater financing. At this meeting, Team members also voiced their concerns about the voluntary Chesapeake Bay Program's approach to watershed management and the regulatory approach posed by clean water regulations.

Faced with many complex issues, the Tributary Teams are diverse in their focus, strongly committed, and persistent in their drive for a better environmental future. With the signing of the Chesapeake 2000 Agreement and the upcoming development of the new Tributary Strategies, the role of the Teams in their watersheds will increase in importance. The Teams will continue to work with state and local officials to ensure the development and implementation of environmental policies that are consistent with Chesapeake Bay agreement initiatives. They will also strive to raise the awareness of Maryland citizens about their watershed and their role as environmental stewards by engaging them in environmental projects and encouraging these citizens to reduce their environmental impacts.

From Rooftops to Watersheds

Chesapeake 2000 Agreement

In recognition of the Chesapeake Bay's extraordinary productivity, species diversity, and its importance to the region's economy and culture, the States of Maryland, Pennsylvania, and Virginia; the District of Columbia; the Chesapeake Bay Commission; and the U.S. Environmental Protection Agency signed the first Chesapeake Bay agreement in 1983. The agreement's main purpose was to establish a multi-jurisdictional partnership to restore and protect the Bay. As the program and partnerships evolved, the need for more refined and definitive goals arose. In 1987, the partners signed a new Chesapeake Bay agreement that, among other things, called for a 40% reduction in nutrient loads to the Bay by the year 2000. In 1992, this agreement was amended to establish the Tributary Strategies Program, which charged the signatories with the task of achieving the 40% nutrient reduction goal in each of the Bay's major tributaries.

While significant progress has been made in meeting the goals of these previous agreements, an increasing population and development in the Bay watershed coupled with improvements in technologies and data meant that a new agreement was necessary. For most of 1999, Chesapeake Bay Program staff and partners worked with scientists, local officials, conservation leaders, and the Tributary Teams to develop the new agreement. Once the draft was prepared, the Tributary Teams held public forums between January and March 31, 2000, to give Team members and the general public an opportunity to review and comment on the draft agreement. The Teams consolidated these comments and submitted them to the Drafting Committee for consideration.

On June 28, 2000, the Bay signatories met to sign the Chesapeake 2000 Agreement and to renew their commitment to the Chesapeake Bay and its watershed. The signing took place at Herrington Harbor South in Anne Arundel County, Maryland. More than 700 people from all the signatory states, districts, agencies, and commissions attended the event.

Chesapeake 2000 establishes more comprehensive goals and commitments than the previous Bay agreements as it seeks to meet existing goals while taking into account the challenges that lie ahead. The primary goal of the new agreement is to improve water quality sufficiently to sustain the living resources of the Chesapeake Bay and its tidal tributaries and to maintain that water quality in the future. As a result, this ambitious agreement includes the establishment of new nitrogen and phosphorus load reduction goals that are based on the needs of the tidal living resources. Other priorities in the agreement include healthy living resources, improved and increased habitat, a 10-fold increase in oysters, better resource land management, a sediment load reduction goal, a review of current tax policies to encourage Smart Growth, a no net loss of wetlands, and engaged citizens. The agreement also focuses on chemical contaminants, priority urban waters, air pollution, boat discharges, land conservation, development, redevelopment and revitalization, transportation and enhanced public access to the Bay.

A complete copy of the Chesapeake 2000 Agreement can be obtained through the Internet at www.chesapeakebay.net or by calling the Chesapeake Bay Program Office at 1-800-YOUR BAY.

Maryland's Chesapeake Bay Partnership Agreement

The importance of the role that local governments play in the restoration and protection of the rivers and the Bay was demonstrated on July 6, 2000, when Governor Parris N. Glendening and elected officials from Maryland's counties signed the Chesapeake Bay Partnership Agreement at Quiet Waters Park in Annapolis, Maryland. This agreement, which the Tributary Teams' state and local government representatives helped draft, outlined state and local

Currently, 15.1 million people live in the Bay watershed. Estimates project that this number will increase 10% by 2010. Where and how we grow in the watershed will ultimately determine the health and resiliency of the Bay's natural resources.

Team Chairs Mary Lorsung, Ginger Ellis, and Jack Anderson witness the signing of Maryland's Chesapeake Bay Partnership Agreement by Governor Parris Glendening and Anne Arundel County Executive Janet Owens.

government commitments to address the goals of the Chesapeake 2000 Agreement at the local level. Governor Glendening, county executives, county commissioners, and council members participated in the ceremony. As each county official signed the agreement, Tributary Team representatives from the county's watershed stood by to witness their commitment.

By signing the agreement, elected officials from Maryland's counties and Baltimore City agreed to work cooperatively to restore local watersheds and the Chesapeake Bay. They also committed to participate on the Tributary Teams, to help in the development of the revised Tributary Strategies, to address the goals of the Chesapeake 2000 Agreement, to support the development of Chesapeake Bay Program policies, and to pursue funding and other incentives to support local government watershed restoration and protection programs.

Watershed Revitalization Partnership Funds

During the signing of Maryland's Chesapeake Bay Partnership Agreement, Governor Glendening announced the Watershed Revitalization Partnership grant program. Through a partnership with the Maryland Department of Natural Resources (DNR), the Maryland Department of Transportation will provide $6 million to help fund locally sponsored stream restoration projects. This partnership expands on the existing DNR greenway, wetlands, and stream restoration projects that are currently funded by the Maryland Department of Transportation through the Transportation Equity Act for the 21st Century (TEA 21).

Maryland's Nutrient Cap Strategy Workgroup

The 1987 Chesapeake Bay Agreement called for a 40% reduction in nutrient loads to the Chesapeake Bay by 2000. In 1992, the Bay signatories agreed that once these reductions were achieved, the nutrient load levels to the Bay would be maintained, or capped, to ensure that the nutrient reductions achieved would not be eroded by future growth, land use changes, or other situations leading to load increases.

In September 1999, Maryland formed a Nutrient Cap Strategy Workgroup to develop an Interim Nutrient Cap Strategy for Maryland. The workgroup is made up of Tributary Team members, state and local government staff, university representatives, and various other interest groups.

In 2000, the workgroup developed a draft Interim Nutrient Cap Strategy and distributed it to the Tributary Teams for review. This strategy will be submitted to the Chesapeake Bay Program in March 2001. The Interim Nutrient Cap Strategy has four primary purposes that include the following:

1) *Overcoming shortfalls* – Some tributary basins fell short in meeting their 2000 nutrient reduction goals, and there is a

Through funding from the Watershed Revitalization Partnership Fund, the Teams anticipate that many of Maryland's streams will be restored.

statewide shortfall for nitrogen. The Interim Nutrient Cap Strategy will identify these shortfalls and determine the practices and approaches it will take to efficiently achieve the Tributary Strategy reductions statewide and in each basin.

2) Offsetting growth in load – An increasing population and expanding development and business activity in the Chesapeake Bay watershed are creating an increase in nutrient loads to the Bay. The Interim Cap Strategy is designed to offset this growth in load through 2005 with the implementation of specific practices and general approaches, such as growth management. This strategy will be superceded by new nutrient reduction goals and strategies that are expected to be developed prior to 2005.

As more people move near the water, the focus of the Nutrient Cap Strategy and the Tributary Strategies will be reducing the impacts of runoff from urban sources.

3) *Identifying long-term issues, opportunities, and policy needs* – Significant progress has been made in reducing nutrient loads to the Bay. Until recently, this effort has focused on existing sources of nutrients and not offsetting new sources of nutrients that come with increases in population, development, and business activity. The Interim Cap Strategy establishes a nutrient load cap, which means that there will be no increases in nutrient pollution in the Bay watershed. To maintain the capped load and further nutrient reduction efforts, the Nutrient Cap Strategy Workgroup has identified several issues, opportunities, and policy requirements that need to be addressed before a long-term nutrient strategy is developed.

4) *Making a transition from current reduction goals to new goals and updated tools* – The Chesapeake 2000 Agreement commits the signatories to establish a new nutrient reduction goal based on the Bay's living resources. This new goal will challenge the signatories to reach even greater nutrient reduction goals and achieve substantial sediment reductions.

Maryland's Interim Nutrient Cap Strategy is being used to transist between the old and new Chesapeake Bay nutrient goals. The Nutrient Cap Strategy Workgroup plans to evaluate the nutrient cap and reduction goals using the latest tools and technologies. One example is the updated and improved Chesapeake Bay Program watershed model that helps assess the human impacts on the Bay and the results of practices and programs. The workgroup will also identify approaches and practices that will help achieve the new Chesapeake Bay nutrient reduction goals.

Trib Team Quick Fact

Sir Ralph Lane gave the Bay its present name when he explored the region in 1585 and encountered a Native American tribe by the name of Chesapeake. English translations of Chesapeake range from "Mother of Waters" to "Great Shellfish Bay."

Tributary Strategies

Maryland's Tributary Strategies were developed in 1995. The primary goal of these Strategies was to achieve the Chesapeake Bay 40% nutrient reduction goal in each of the 10 major watersheds of Maryland by 2000. The Strategies recommended implementation targets for urban, agricultural, and resource protection best management practices that, along with the implementation of biological nutrient removal at large wastewater treatment plants, would meet the 40% nutrient reduction goal in each tributary basin.

With the development of new nutrient reduction goals for the Chesapeake Bay, the Tributary Strategies will be evaluated and revised by 2002. Formulating these new Strategies will require the contributions of many people who have a variety of perspectives and a broad knowledge of the programs and practices that make up the current approaches to nutrient pollution management. The Tributary Teams contribution to the development of these Strategies will be invaluable. Team members will add an in-depth perspective and a personal knowledge of their watersheds and programs that will help make the new Strategies practical and applicable tools to implementing and achieving the Chesapeake Bay goals.

Other related issues that are concurrently being addressed include the following:

1) Maryland's Nutrient Cap Strategy, which will include information on nutrient load reductions, growth in loads, best management practices, and implementation projections, will be used to develop the new Tributary Strategies.

Maryland's Tributary Teams' Mission Statement

In support of the Chesapeake Bay Agreements, the mission of Maryland's Tributary Teams is to:

- Support and promote actions and policies to ensure healthy watersheds with abundant and diverse living resources;
- Through education, heighten awareness of each individual's impact on water quality;
- Promote implementation of projects that restore and protect living resources and water quality; and,
- Facilitate communication and coordination among governments, landowners, businesses, and all other citizens toward this common goal.

2) The Chesapeake Bay Program is developing revised nutrient goals, new sediment goals, and new "designated uses" and water quality criteria for dissolved oxygen, chlorophyll *a*, and water clarity. This information will be used to establish load reduction goals for each Tributary watershed. The Tributary Teams will help in this effort by providing comments during briefings and workshops and in reviews of model results.

3) In conjunction with the state agencies, the Teams are identifying what information should be included in the new Tributary Strategies. For example, how will watershed plans, such as the Watershed Restoration Action Strategy, be incorporated if they are available? Strategy developers are also considering how regulatory programs, such as Total Maximum Daily Loads and the National Pollution Discharge Elimination System, will be incorporated into the new Strategies.

4) The Teams have focused on the tracking process used to measure how many best management practices have been installed. They have worked with state and Chesapeake Bay Program representatives to resolve discrepancies between local and state data. In addition, the teams are reviewing issues concerning land use projections, assumptions, and the limits of technology. The Teams are committed to working with the state agencies to ensure that local government data are accurately reflected in the new Tributary Strategies.

Trib Team Quick Fact

By implementing simple energy conservation measures, an average household can save up to $600 a year in energy costs! Further, if each U.S. household lowered its thermostat by just 6 degrees, we would save 500,000 barrels of oil a day.

Governor's Executive Order on Green Power and Energy Efficiency

The Chesapeake Bay Program estimates that up to 27% of the total nitrogen load into the Bay comes from air pollution, with fossil fuel burning power plants being the largest source. While the role of airborne pollution to the health of the Chesapeake Bay has not been a focus in the past, the Lower Western Shore Tributary Team took a leadership role in 2000 and pursued air pollution abatement policy measures to address this serious environmental and human health threat. The Team investigated nitrogen deposition in the Bay region, and members held informal meetings with the Maryland Energy Administration and DNR's Power Plant Division and Green Building Program to develop options for reducing airborne nitrogen pollution.

In April 2000, the Team sent a letter to Department of General Services' Secretary Peta Richkus explaining its intent to formally request a Governor's executive order that would address both the production and consumption of energy. The first part of the executive order would require the state to buy a portion of its electricity from clean energy sources, including wind, solar, biomass, and methane gas released from landfills. The second part of the executive order would require state departments and agencies to reduce energy consumption by instituting energy efficient techniques and approaches for the design, construction, operations, maintenance, and deconstruction of all state-owned and leased buildings.

The Team's recommendations coincide with many of the Chesapeake 2000 Agreement goals, including the roles that air pollution, nitrogen deposition, and global warming play in the Chesapeake Bay ecosystem and how Maryland will "lead by example." At the Tributary Team meeting with the Governor on May 11, Governor Glendening committed his administration to develop the executive order. Since then, Team members and staff from various state departments and agencies drafted the Executive Order on Green Power and Energy Efficiency. Governor Glendening is expected to sign the executive order in early 2001.

2000 Team Awards

At the 2001 Tributary Team Annual Meeting, Governor Parris N. Glendening, Maryland Department of Agriculture Secretary Bud Virts, and Department of General Services Secretary

Peta Richkus handed out the 2000 Tributary Team Awards in honor of Tributary Team members and participants who made a difference on their Team and in their watershed in 2000. **Matt Mulder** received the Middle Potomac Team Award for his work and success on the Middle Potomac Alternative and Innovative Farming Practices Agricultural Tour and for his willingness to work hard and carry out great ideas. **Alison Rice**, Upper Potomac Team, was commended for her leadership in developing an environmental education program to teach environmentally-friendly development strategies to Allegany County contractors, developers, consultants, engineers, and government officials and for her work to teach students about stream ecology. **David Waring**, Lower Potomac Team, was recognized for his advocacy in outreach and education throughout Southern Maryland. Often quoted as saying, "An ounce of education prevents a pound of legislation," Dave helped develop the 1999 "Fragile: Handle with Care" public outreach document, helped coordinate the Team's wade-in, assembled a complete listing of environmental events and activities throughout the watershed, and promoted Team goals before county and state elected officials. **John Earl Hutchison** was given the Upper Eastern Shore Team Award for his regular participation and contributions at Team meetings and for his honest, unflinching perspectives and insights regarding farming on the Eastern Shore. **Billie Laws**, Lower Eastern Shore Team, was acknowledged for chairing the committee that organized the successful Spray Irrigation Tour and for helping to generate interest and membership in the Tributary Team and public awareness of the overall program. **Craig Zinter**, Choptank Team, was recognized for his 2 years of service as Team chair and for his 1 year of service as Team vice chair. He was also acknowledged for his work with the Clean Farms Initiative, the Trappe Creek oyster bar restoration project, the Public Drainage Association Task Force, a bonus incentives program for buffers on the Tuckahoe River, and his work with the county, state, and international Envirothon Program. **John Martin** received the Patapsco Back River Team Award for his efforts to organize and establish a tree grow-out station at the Back River wastewater treatment plant. **Glen Hedelson**, Upper Western Shore Team, was awarded for his many contributions to the watershed, including his efforts with the Team's wade-in, helping establish a Harford County Save Our Streams monitoring program, bringing GIS capabilities into the county's high schools, and participating on the Harford County Environmental Advisory Board. **Susan Overstreet**, Patuxent Team, was acknowledged for her efforts to draft the Patuxent Policy Plan Addendum and for her efforts to improve water quality in the streams and reservoirs by enhancing public outreach, completing stream corridor assessments, and implementing a local cost-share program for streamside best management practices. **Keith Underwood**, Lower Western Shore Team, was given a Team award for his leadership in the restoration of the Atlantic White Cedars in Howards Branch. Keith was also instrumental in creating the "Bog Committee" – a multi-jurisdictional effort to preserve globally-significant bogs near the Magothy River.

Charlie Conklin (center) receives the 1999 Bernie Fowler Award from 1998 winner Bill Stack (right) and Don Boesch, President of UMCES (left).

Jo Owen, Upper Western Shore Team, was the 2000 Bernie Fowler Award recipient. Charlie Conklin (the 1999 Bernie Fowler Award recipient) and Maryland Department of the Environment Secretary Jane Nishida gave Jo the award at the 2001 Annual Meeting.

The Bernie Fowler Award is considered the most prestigious Tributary Team award, because it recognizes an individual who has shown true leadership and who is held in high esteem by fellow members. Team chairs collaborate to decide which of all the Tributary Team members should receive this award.

Jo is a long-time community and environmental activist. She came to Maryland from Chicago after serving as a Navy Wave where she taught range estimation on a gunnery range. Her interests include protecting drinking water reservoirs and groundwater. Among her many contributions to the Tributary Teams, Jo was instrumental in establishing the Team's partnership with *The Baltimore Sun* newspaper to develop the 1999 public outreach piece "Fragile: Handle with Care" and the upcoming 2001 follow-up "Picture Maryland — Where do We Grow from Here?" Jo was also influential in developing the "Bay Friendly Gardening Calendar." In addition, she is a Master Gardener and a garden consultant for the Federated Garden Clubs of Maryland. Jo is tireless, devoted, and inspiring. She is a true leader.

4TH ANNUAL TRIBUTARY TEAM MEETING

The Tributary Teams held their 4th Annual Tributary Team Meeting, "Charting Our Course," on January 22, 2000, at the

Maritime Institute in Linthicum Heights, Maryland. More than 240 people attended the event.

The opening plenary session focused on the renewed commitments of the Chesapeake 2000 Agreement, and Anne Swanson, executive director of the Chesapeake Bay Commission, gave the overview. The meeting's concurrent sessions covered such diverse topics as green infrastructure, growth and the nutrient cap, forming local watershed organizations, sustainable farming, community supported agriculture, information from the Maryland Biological Stream Survey, nutrient impacts from the atmosphere, nutrient management, green schools, aquifers and the drought, septic system legislation, wetland treatment systems, dredging, targeting buffers and many other topics.

Kennedy Lawson Smith, director of the National Main Street Center, National Trust for Historic Preservation, was the luncheon keynote speaker. She addressed the "Economic Arguments for Environmental Choices." She discussed, with humor, the land development that has resulted in enormous amounts of impervious surface and poor environmental designs in our watersheds and neighborhoods.

Stephen Hannibal, our youngest Team member, takes a Secchi disc reading in the Anacostia River during the Middle Potomac Dip-In.

During the meeting, a member from each Team received a 1999 Team Award. Fellow Team members nominated award recipients in recognition of the member's contribution to the Team and the environment. **Elizabeth Hickey**, Patuxent River Team, was given a Team award for her overall energy and efforts on the Patuxent River Commission, particularly for her work as a member of the On-Site Sewage Disposal Task Force and on the Patuxent Vision Statement. **Sue Veith**, Lower Potomac Tributary Team, was awarded for her overall spirit, her behind the scenes work in St. Mary's County, and for her efforts to promote BayScapes. Her work with the Team is an example of the personal stewardship that is the essential foundation for protecting and restoring the environment. **Tim Goodfellow**, Upper Potomac Team, was recognized for his instrumental work in developing the Upper Potomac's Speaker's Bureau, participating in the planning of the spring forest buffer planting, and helping to promote low-impact development. **Patricia Pudelkewicz**, Upper Western Shore Team, was acknowledged for her leadership with the Team's Point Source Workgroup and for her work to promote upgrades of local wastewater treatment plants. **Marshall Rea**, Middle Potomac Team, was commended for his outreach and education to horse owners during the Horse Expo and for his dedication and spirit to the Team. **John Martin,** Patapsco/ Back River Team, received a Team award for his vision and commitment to support the Team's tree grow-out station in a partnership with the Back River wastewater treatment plant. **Earl Bradley**, Lower Western Shore Team, was recognized for his ability to link community activities to Team goals, to contribute to small area planning processes, and for his leadership in reforestation efforts. **Bill Edwards**, Choptank Team, was commended for his creativity and vision to develop the Clean Farms Initiative and for his overall Team effort. **Robert Davis**, Lower Eastern Shore Team, was given a Team award in recognition of his quiet determination, his ability to champion the partnership of agriculture stewardship with food production, his work on the Public Drainage Task Force, and for keeping the Team aware of agricultural perspectives. **Mike Whitehill**, Upper Eastern Shore Team, was awarded for his work on the Developed Lands Workgroup, the Chino Farms habitat restoration project, the Environmental Matters Committee briefings, and in promoting environmental guidance for waterfront landowners.

The Bernie Fowler Award was established in 1998 to recognize a person that exemplifies the spirit and dedication of a volunteer. All of the Team chairs collaborate to nominate this award recipient. In 1999, **Charlie Conklin**, chair of the Upper Western Shore Team, received the Bernie Fowler Award in recognition of his tireless dedication to the Upper Western

Shore watershed, his leadership of the Tributary Team, and his persistent attempts to ensure a healthy environment.

Wade-Ins, Dip-Ins, and Fish-Ins

Thirteen years ago, retired Maryland State Senator Bernie Fowler returned to the Patuxent River waters of his boyhood to see how far he could wade into the water before losing sight of his feet. Dressed in denim overalls and white sneakers, the tall, thin man was discouraged by how quickly the murky waters clouded his sneakers from view. Recognizing the importance of water clarity to the health of the Patuxent River and the creatures and vegetation that live within it, Senator Fowler vowed to return each year and track the progress of the Chesapeake Bay restoration and protection effort through his local river. The wade-in, a non-technical method of measuring water clarity, has become a unique public outreach event that has helped increase public support for the restoration and protection of the Chesapeake Bay and its tributaries.

In 1998, Senator Fowler, also a member of the Patuxent Team, challenged the other nine Tributary Teams to conduct yearly wade-ins. In 2000, all 10 Teams began conducting wade-ins in their watersheds to track progress and engage local citizens in the event. Because of their urban nature, the Patapsco/Back and Middle Potomac Teams conduct a Secchi Dip-In where participants use Secchi disks to take water clarity measurements in the rivers of their watershed. Due to the shallowness of the Upper Potomac, the Team conducts an Upper Potomac Fish-In contest. However these events are done, they have helped spread the word about the importance of environmental stewardship and have helped connect people to their local river and watershed.

Open House for New and Prospective Members

On July 13, 2000, the Tributary Teams sponsored an Open House and reception in the DNR Tawes Garden for new and prospective Team members. Approximately 70 people attended the event, including potential members, Team members and coordinators, and state agency representatives.

Tributary Strategy Program Director Danielle Lucid began the event with a presentation about the Tributary Strategy Program's goals and objectives. Following the presentation, participants met with their prospective watershed Team chair to ask questions and obtain a member's point of view about the program and the Team. The event concluded with a reception in the Tawes Garden where the attendees gathered to mingle, converse, eat, and listen to a string quartet.

In addition to increasing the overall membership of the Teams, an emphasis has been placed on increasing Team diversity. It is the aim of the Tributary Strategy Program and its members

Patapsco/Back Team Chair Jack Anderson (center) talks with prospective members at the New Member Reception in July.

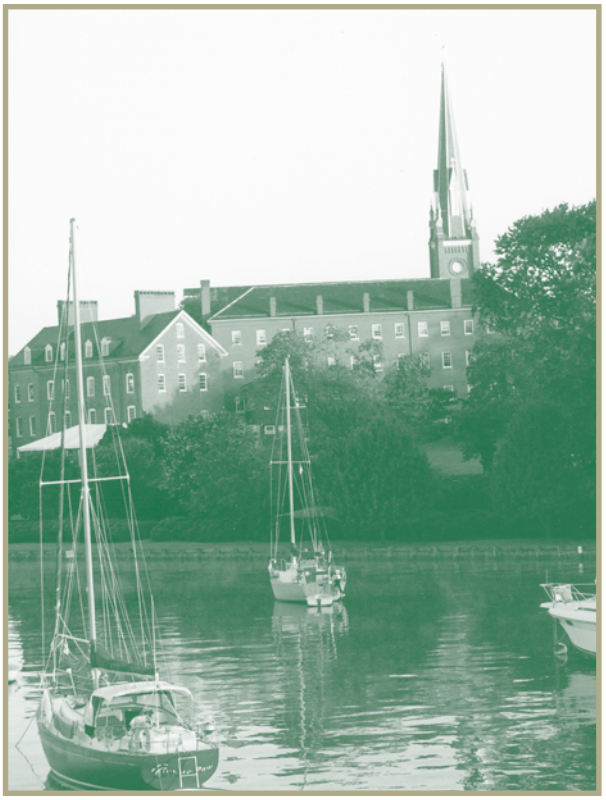
to make the Teams a true representation of their watershed constituencies. In November, the Tributary Strategy Program submitted 30 names to the Governor's Appointment Office. The minority representation on the Teams has grown as the program and Team members strive to engage minorities by fostering relationships with targeted communities.

The Tributary Strategy Program will sponsor another summer membership drive in 2001 to build and sustain the Teams' membership. All are welcomed and invited to attend.

Meeting with Governor Parris N. Glendening

Governor Glendening welcomed Team chairs, vice chairs, Bay Cabinet members, and staff to lunch at the Government House on May 11, 2000. Following the lunch, he spoke to the participants, stressing how much he appreciated their efforts. Five of the Team chairs reported on the progress, issues, and concerns of the Tributary Teams.

Joan Willey, then chair of the Lower Western Shore Team, discussed the Team's recommendation for the development of an executive order that addressed energy efficiency and renewable energy. The Lower Western Shore Team recommended that Governor Glendening develop an executive order that required all state departments and agencies to use energy efficient techniques and policies. Following her presentation, the Governor said that he would direct the Department of General Services to work with the Maryland Energy Administration and DNR's Green Building Program to develop an executive order that took into account the Team's recommendations. The Governor's Executive Order on Green Power and Energy Efficiency is expected to be signed in early 2001. (See previous section entitled "Governor's Executive Order on Green Power and Energy Efficiency" for more information.)



Ginger Ellis, chair of the Lower Western Shore Team, discussed the aging infrastructure and uncontrolled stormwater runoff from urban, suburban, and rural areas. She expressed concern for the major impacts that poorly maintained stormwater facilities have on sensitive riparian areas and discussed the enormous problem of financing this infrastructure. The Developed Lands Cross-Team Workgroup has since focused on this topic.

Tom Miller, Upper Eastern Shore Team member, expressed his concern regarding the failed septic system legislation, which many Tributary Team members had worked hard to support. He recommended that a statewide campaign be established to educate citizens, builders, and elected officials about the need for septic systems with improved pollution removal capabilities. The Governor concurred that public outreach on this issue is critical. He welcomed the Teams involvement.

Ted Graham, Middle Potomac Team chair, addressed the Tributary Team's issues with Total Maximum Daily Loads. A key concern is the conflict between the regulatory requirements of Total Maximum Daily Loads and the collaborative Chesapeake Bay Program activities built on watershed planning and partnerships. Team members met with federal and state officials to identify solutions to this conflict, and the Chesapeake 2000 Agreement reflects this resolution. (See the "Tributary Strategies" section for more information.)

Jerry Land, Upper Eastern Shore Team chair, addressed the problems that the Tributary Teams are having with appointing new members to the Teams. Governor Glendening acknowledged the Teams' concern. Jerry also discussed public outreach needs, point source issues, the Maryland's Chesapeake Bay Partnership Agreement, the need for legislative updates, and invited the Governor to attend the Upper Eastern Shore Annual Wade-In. The Tributary Teams plan to meet with the Governor again in the summer of 2001.

Meeting with the Governor's Bay Cabinet

In addition to meeting with Governor Glendening, the Team chairs and vice chairs met formally with the Governor's Bay Cabinet in November 2000. The Team chairs were pleased to see the recent additions of Maryland Department of General Services Secretary Peta Richkus and Maryland Department of Planning Secretary Harriet Tregoning on the Bay Cabinet. Topics of discussion during the meeting included cover crops, sanitary sewage infrastructure, sewage spills, septic systems, stormwater, land use, and the new Tributary Strategies.

Tom Miller, Upper Eastern Shore Team member, also briefed the Governor's Bay Cabinet in October on the Public Outreach Cross-Team Workgroup's development of a booklet entitled "Picture Maryland – Where Do We Grow from Here?"

Coordinating Committee Meetings

The Coordinating Committee, composed of the Tributary Team chairs and vice chairs, met in April, July, and September 2000. The primary goal of these meetings was to coordinate the Tributary Teams' initiatives, to review and coordinate upcoming presentations, and to discuss the overall direction, deadlines, and business of the program.

Local Government Team Representatives Meeting

The Team members who represent local government agencies on the Tributary Teams met twice during 2000. Their first meeting focused on the role of the local governments and the Teams in the Chesapeake 2000 Agreement. They also reviewed the draft of Maryland's Chesapeake Bay Partnership Agreement. Additionally, local government Tributary Team representatives were briefed on the Watershed Restoration Action Strategies, the Conservation Reserve Enhancement Program, and the Shore Erosion Control Task Force findings.

The second meeting was held in September in conjunction with the Tributary Team Coordinating Committee Meeting to plan the next steps in implementing key elements of the Chesapeake 2000 Agreement. State agency representatives gave presentations that reviewed the new agreement and made recommendations for key roles that the Tributary Teams can take to implement the new agreement at the watershed level.

Local Government Briefings

In 2000, the Teams completed briefing all of Maryland's local government elected officials. This is the second time since the Team's inception that the chairs, vice chairs, state agency

secretaries, and local government team representatives have conducted such briefings. This year, the Teams addressed the role of the Tributary Teams, the drafts of Maryland's Chesapeake Bay Partnership Agreement, and the Chesapeake 2000 Agreement.

Developed Lands Cross-Team Workgroup

Maryland Department of the Environment Secretary Jane Nishida created the Developed Lands Cross-Team Workgroup to provide a forum for Tributary Team members who are interested in developed lands to discuss issues, goals, accomplishments, and priorities. The workgroup also gives Team members the opportunity to speak directly to those agency representatives who are responsible for regulatory programs affecting developed lands.

In 2000, the workgroup continued its quest to better understand Maryland's regulatory programs and to promote innovative tools. Topics discussed during meetings included stormwater management regulation changes, proposed laws and regulatory changes for septic systems, financial assistance through state loans or grants, tributary modeling, impacts of best management practices on streams, the tracking of best management practices, low impact development, green roofs, education, and outreach. The workgroup also explored the latest research, available tools, and regulatory processes.

For 2001, the workgroup plans to develop a white paper entitled "Financial Alternatives for Maryland's Local Stormwater Management Programs" to further the discussion of dedicated funding sources at the local level and to collect the appropriate information from local governments.

Point Source Cross-Team Workgroup

The Point Source Cross-Team Workgroup was created in 1997 at the request of Maryland Department of the Environment Secretary Jane Nishida in response to the Tributary Teams desire to expand communication with the department on point source issues. It serves as a forum for Tributary Team point source representatives and other interested Team members to discuss specific issues and challenges, exchange information, provide updates on Team activities, and discuss regulatory programs that affect point sources.

The Point Source Cross-Team Workgroup met three times in 2000. Briefing topics included Total Maximum Daily Load development, biological nutrient reduction implementation in the Bay watershed, issues and barriers to the biological nutrient reduction upgrade at the Patapsco wastewater treatment plant, implementation of Maryland's phosphate ban, overview of the current status of Maryland's laws and regulations pertaining to the phosphate ban and phosphorus load reductions, hardness in drinking water, and nutrient trading as a tool to meet and maintain the nutrient loading cap. During 2000, the Maryland Department of the Environment also worked with the Patapsco/Back and the Upper Potomac Teams to encourage Baltimore City and the Town of Brunswick to discuss biological nutrient reduction agreements and to support upgrades for two of their wastewater treatment plants.

Tributary Teams Promote Horse Pasture Management

Farmettes, or small farms consisting of a few acres, can be significant sources of nutrient and sediment runoff if not managed properly. Owners of farmettes often find handling and disposing of animal manure and bedding difficult. Stabling horses on small pieces of property creates conditions for the wastes to be concentrated. Runoff from unmanaged animal wastes and eroding pastures carry nutrients and sediment to the creeks and streams that eventually flow into the Bay.

A 1992 Cooperative Extension survey of Baltimore, Carroll, Cecil, Harford, Howard, Montgomery, and Prince George's Counties found that more than 80,000 people own or lease a horse in these counties. The survey also determined that growth in the horse industry and farmettes is expected to increase. With this increasing trend, local agriculture groups recommended that the Tributary Teams address horse pasture management, particularly in the urbanizing areas of the western shore watersheds.

The Teams are trying to educate and help even the smallest farm owners reduce their nutrient and sediment inputs into nearby streams by utilizing horse pasture management practices.

In January 2000, representatives from the Agricultural Workgroups of the western shore Tributary Teams participated in the 4th Annual Horse World Expo. More than 25,000 people attended this 3-day event. The event provided horse owners with information on technical assistance available through the Soil Conservation Districts and Cooperative Extension Service. In addition, the Expo included presentations about horse pasture and manure management and the Water Quality Improvement Act of 1998.

The centerpiece of the Tributary Team booth was the pictorial exhibit "Maryland's Chesapeake Bay is Horse Country." This exhibit highlighted best management practices that the farmer can employ to address pasture and manure management issues. Team members distributed yardsticks containing information on effective pasture management techniques. The Tributary Teams' Agricultural Workgroups are planning to participate in the 5th Annual Horse World Expo.

The Public Drainage Task Force seeks to protect the economic well-being of the Eastern Shore while maintaining its environmental integrity.

Picture Maryland – Where Do We Grow From Here?

In partnership with *The Baltimore Sun*, the Tributary Cross-Team Public Outreach Workgroup has been developing an educational insert to be distributed with the newspaper on Earth Day, April 22, 2001. This project builds on past successful collaborative projects with *The Baltimore Sun*, such as the booklet "Fragile: Handle with Care," which was distributed with the newspaper in 1999 to reach, motivate, and educate citizens to take action and protect water quality.

"Picture Maryland – Where Do We Grow From Here?" will provide an extraordinary opportunity to reach adults and children who generally are not exposed to the issues of land development and growth or the actions individuals and communities can take to enhance the livability of existing and future communities. The final product will include a 32-page booklet that will be circulated with the newspaper to more than one million people, an extensive website that will be hosted on *The Baltimore Sun's SunSpot*, and a companion Teacher's Resource Booklet that will be distributed to more than 600 Maryland classrooms. The booklet will also be available for the Tributary Teams to distribute to citizens to educate them on growth issues and the protection of Maryland's valuable natural resources.

The "Picture Maryland" booklet is the result of the creative talents of the Public Outreach Cross-Team Workgroup. Frederick, Baltimore, and Dorchester County planning staff have lent their experience to ensure that the document accurately reflects the local process. The project has also benefited from the contributions of the Izaak Walton League of America, the Eastern Shore Land Conservancy, 1000 Friends of Maryland, the University of Maryland, Baltimore Main Streets, Maryland Association of Counties, the Maryland Municipal League, the Centers for Disease Control and Prevention, and Maryland's state agencies.

Trib Team Quick Fact

Native American river names abound throughout the Chesapeake Bay watershed. Rivers were named after the tribes that inhabited the watershed. In fact, Choptank translates to "place of big current," and Patuxent means "at the little falls in a stream."

Public Drainage Association Task Force

In July 1998, the Choptank River Tributary Team wrote DNR Secretary Sarah Taylor-Rogers, Ph.D., about the Eastern Shore's conflicting needs for nonpoint nutrient and sediment controls that slow down water movement and the need for adequate land drainage through established public drainage systems. The letter recommended that best management practices be developed through interagency consultation between DNR, Departments of the Environment and Agriculture, the State Highway Administration, and local jurisdictions.

After endorsement by the Governor's Chesapeake Bay Cabinet, the Cabinet chair convened the Public Drainage Task Force. The Task Force comprised a broad-based group, including representatives of the agricultural community, legally established Public Drainage Associations, local environmental groups, and members from the Choptank and Lower Eastern Shore Tributary Teams. The Task Force

was charged to create a "win-win" solution for the agricultural community and the environment.

The Public Drainage Task Force report was completed in October 2000, endorsed by the Governor's Chesapeake Bay Workgroup, and forwarded to the Chesapeake Bay Cabinet for implementation. The Task Force recommended the formation of an interagency workgroup to coordinate drainage issues and recognized that more funding would be needed to implement better management strategies. This effort exemplifies the important role the Tributary Teams play in identifying and bringing significant local and regional watershed issues to the attention of Maryland state agencies.

Habitat Restoration Grants

In 2000, the state approved $100,000 in general funds to support Tributary Team Habitat Restoration projects. DNR's Watershed Restoration Division worked with Tributary Team members to review the proposals and award the funds. In its first year, the grant provided funds for such projects as the development of oyster bars, wetlands restoration, riparian forest buffer plantings, stream restoration, shoreline erosion abatement, and habitat restoration.

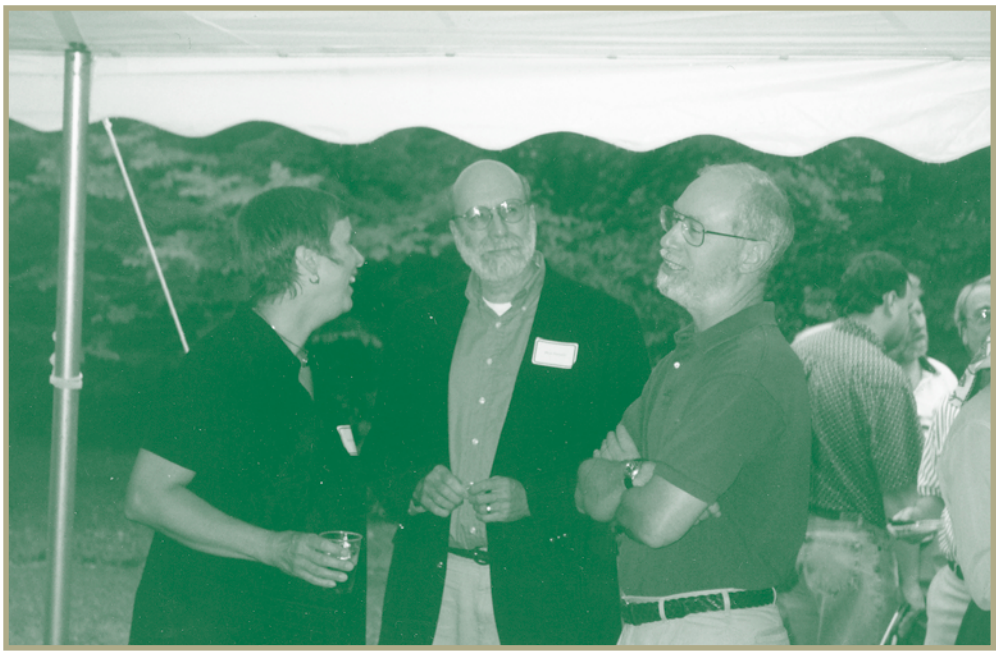
The Upper Western Shore, Lower Eastern Shore, Upper Eastern Shore, Patapsco/Back River, Upper Potomac, and the Lower Western Shore Tributary Teams partnered with several organizations to receive the 2000 grant awards. One highlight of the grant program was the Non-Tidal Wetland Creation Project at the North Harford High School in Pylesville, Maryland. The grant funding supported the development of wetlands to act as secondary treatment to the school's wastewater treatment plant. The wetland treatment provides water quality improvement to the Broad Creek watershed, which is part of the Upper Western Shore watershed, by removing nutrients from the waste stream through biological uptake and retention. The wetland provides wildlife habitat in an area that used to be a mowed field. In addition, the wetland area has been incorporated into the school's environmental education curriculum and provides an area for the students to study wetland ecology.

Water Resource Leadership Initiative

An exciting new program with far-reaching potential is the Water Resource Leadership Initiative (WRLI). Created in 1999 by the University of Maryland's Institute for Governmental Service, the program's mission is to educate and to foster a network of leaders committed to creating collaborative problem-solving processes to resolve complex issues affecting water resources. The program is a 2 year fellowship that involves farmers, citizens, scientists, policymakers, watermen, and environmentalists. Since its inception, several Tributary Team members and staff have been active participants.

The program hones communication, facilitation, and mediation skills and requires participants to apply those skills to water quality improvement and habitat restoration activities. Fellows are taken on field trips and tours that showcase natural resource protection policies, including agricultural nutrient management techniques and public drainage ditches. During their second year, the fellows are required to identify a specific water resource challenge, develop a plan of action, and write a practicum describing their efforts.

One example of a WRLI-I practicum involved Lower Eastern Shore Team Member Jim Newcomb and Team Coordinator Christy Mills who worked together to facilitate the Public Drainage Association Task Force process. This Task Force has since become an example of how, through collaborative processes, a contentious issue with opposing viewpoints can yield positive results and a gained trust through participating stakeholders.



Water Resource Leadership Initiative Director Phil Favero (center) talks with fellow Team participants at the New Member Reception.

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Annual Report 2000

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Finally, we would like to thank two coordinators, Christy Mills and Kristen Beard, who left our staff in 2000 to explore other avenues to restore and protect the Bay. We wish them success in their new endeavors.

Most of all, this report is the result of the hard work of the more than 350 citizens across Maryland who make up Maryland's Tributary Teams. We thank you!

Choptank River

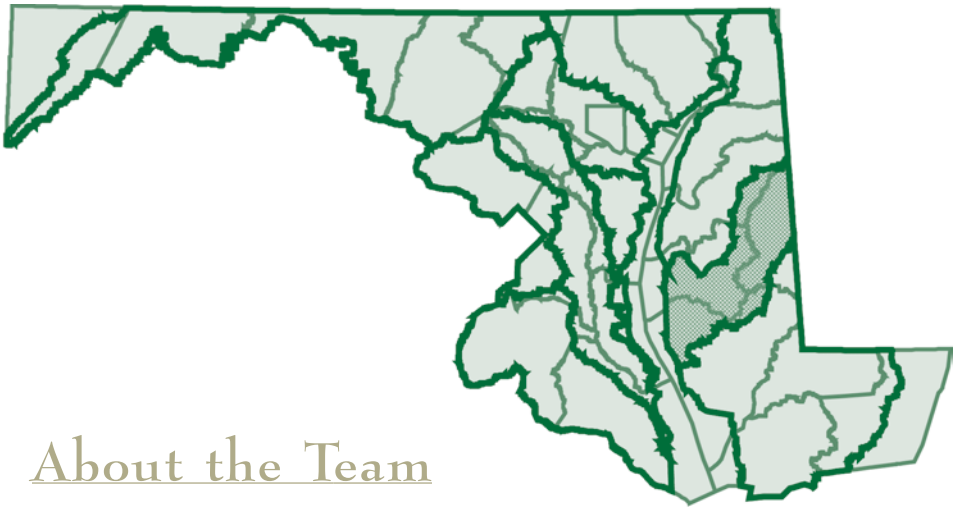
Watershed Heroes

Craig Zinter

Craig's environmental roots trace back to his family's Mid-West farming heritage. As a result, Craig helps foster environmental programs and stewardship through his work and volunteer efforts. At the Talbot County Soil Conservation District, Craig administers the county's erosion and sediment control program. He was one of the founding fathers of the Tributary Strategy Program and has served as the Team's Agricultural Workgroup chair, encouraged the Public Drainage Task Force and cover crop efforts, and served as Team chair for the past 2 years. Craig is the county chair, state co-chair, and international chair elect of the Envirothon Program – an international program that seeks to educate high school students about the environment and develop future action-oriented citizens. Craig is also a husband and father of two children, a member of the Easton Ruritan Club, and serves as a Boy Scout Troop Committee member.

Worral Reed "Nick" Carter III

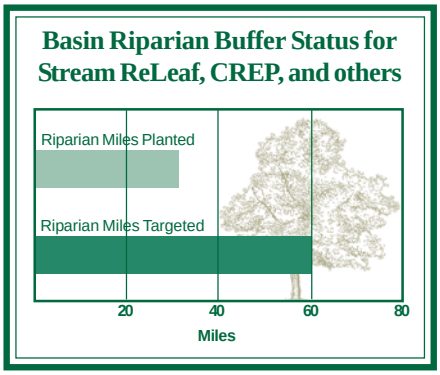
Nick Carter is a tireless crusader for the Bay. He came to Maryland from Norfolk, Virginia in 1965 when he accepted a position as an aquatic biologist at what was to become DNR. In his 35 years with the state, Nick was involved in a wide array of projects and programs that had "anything to do with aquatic ecology." In 2000, Nick retired, leaving behind a legacy of steadfast protection for the Bay, unflinching commentary about the Bay's needs, and a library bearing his name. As a Team member, Nick promoted riparian buffers, enlightened the Team about the way watershed's work, explored GPS technology for applying nutrients on farms, and served on the Public Drainage Task Force. He always emphasized the importance of enjoying the environment and, though retired, Nick continues to educate people about the Bay and serves as chairman of the local chapter of the Sierra Club.



About the Team

Since its inception in 1995, the Choptank Tributary Team has been active advising, educating, and conducting outreach activities on the importance of reducing pollutants entering the Choptank River. The Team consists of members from the farm community, local business leaders, universities, retired persons, and local government representatives. The target audience of the Team's work is the citizens of the four counties that make up the watershed (Dorchester, Caroline, Talbot, and Queen Anne's), their elected officials, watershed organizations, and the numerous agencies responsible for environmental stewardship.

During 2000, the Choptank Tributary Team focused on a couple of key watershed issues, namely establishing a Public Drainage Task Force, preparing a multi-Team cover crop letter, establishing an oyster bar in Trappe Creek, and obtaining greater incentives for the Conservation Reserve Enhancement Program (CREP). Many of these initiatives started with the ideas of one Team member and quickly expanded into a multi-Team, multi-agency effort and, in some cases, a statewide program. The Team also conducted several public outreach efforts during the year to educate and engage the public and local elected officials about their watershed and the need for the restoration and protection of the Chesapeake Bay.



Accomplishments

Public Drainage Task Force

Public drainage on the Eastern Shore refers to a network of ditches that prevent water from collecting on the land by funneling it into nearby streams. A number of environmental and economic issues surround these ditches, which date back to pre-colonial times. Based on the Choptank Team's recommendations, the Chesapeake Bay Cabinet established the Public Drainage Task Force in 1999 to advise the state on the best methods to maintain drainage and enhance the environment. Task Force members were appointed from 23 constituency groups and included 6 members from the Choptank and Lower Eastern Shore Tributary Teams. From July 1999 to August 2000, the Task Force met periodically to review the issues

associated with the drainage ditches and propose recommendations for further consideration. The Task Force published their findings in November 2000.

Tuckahoe Riparian Buffer Project

CREP encourages farmers to retire agricultural land along streambanks by providing above normal rental rates for the land if the farmer plants a riparian buffer, retires highly erodible lands, or restores a wetland. In 2000, the Choptank Team worked with Eastern Shore Resource Conservation and Development to establish a $20,000 grant that provides a one time only extra incentive for farmers in the Tuckahoe watershed to install a CREP buffer. Farmers in the portions of Queen Anne's, Caroline, and Talbot Counties that make up the Tuckahoe watershed signed up for CREP and were given $200 per acre (for up to 3 acres) to install riparian buffers along their streambanks. With money still remaining, the program will be extended into 2001. Maryland has since adopted this program for statewide implementation, and Virginia is in the process of developing a similar program.

Cover Crop Letter

Maryland's Cover Crop Program is an initiative where farmers are assisted in the planting of a crop (usually rye grass) over lands that have recently been harvested to reduce nutrient and sediment run-off, retain the nutrients in the soil for the next crop, and develop a more sustainable farming system. The program currently assists only those farmers on the Eastern Shore. Many of these farmers have been turned away due to limited funding. In October 2000, the Choptank Team set forth the initiative to prepare a letter to Governor Glendening that requested more funds and support for the Cover Crop Program. In the preparation of the letter, the Team researched the results of the program and invited the other Maryland Tributary Teams to co-sign the letter. The final multi-Team letter was submitted to the Governor's office on November 3 and requested an increase in funds to the current Eastern Shore Cover Crop Program and an expansion of the program statewide.

Septic Systems Legislation

During the December 1999 Team meeting, Talbot County Council Member Hilary Spence presented the proposed Governor's Septic System Task Force legislation to the Team and discussed the expected impacts on local governments and communities. Recognizing the need to reduce this source of nutrients to local waterways, the Team members reviewed a summary of the proposed Areas of Special Concern at their February meeting and wrote a letter to their legislators supporting and recommending adaptations to the proposed legislation.

Oyster Restoration

The Team partnered with the Horn Point Hatchery and the Chesapeake Bay Foundation (CBF) to secure the funding and manpower necessary to build and seed a 1 acre oyster bar in Trappe Creek, a tributary to the Choptank River. The bar consists of 100 tons of dredged shell that were placed in 12 piles. During the summer and early autumn, oyster spat were placed on nine of the piles. The remaining three were left unplanted to monitor the rate of natural oyster establishment.

On October 7, Team members along with volunteers from CBF and the Oyster Recovery Partnership met at Horn Point Laboratory in Cambridge to bag oyster shell. The group of 23 volunteers filled 1,300 bags of shell in 3 hours. These bags will be placed in tanks where oyster larvae will metamorphose into spat and permanently attach themselves to the empty shell. Some of these mesh bags will be placed on the Trappe Creek oyster bar in the spring of 2001.

Water Conservation Lesson Plans

The Choptank Team and the Pickering Creek Environmental Center partnered to develop a set of water conservation lesson plans through a grant from the Clean

Team Membership

Team Members

Craig Zinter, Chair, Talbot Soil Conservation Dist.
Gerald Adams, Vice-Chair, Easton Utilities
William Edwards, Farmer
Lenny Gold, Golden Associates
Ted Haas, Univ. of Maryland Coop. Ext. Service
David Harris, Farmer
Karen Houtman, Dorchester Co. Plan. and Zoning
Roby Hurley, Citizen
Richard Hutchison, Farmer
Betsey Krempasky, Caroline Co. Plan. and Zoning
Rick Leader, Pickering Creek Environmental Ctr.
Jim Lewis, Cooperative Extension Service
William Malkus, Farmer
Sharon Morrison, Gateway Marina
Dave Nemazie, UM Center for Enviro. Science
Helen Spinelli, Friends of the Great Choptank River
Robert Wieland, Int'l Economics-Washington

Participants

Jacques Baker, State Mentoring Resource Center
Bruce Coulsen, Citizen
Nick Carter, Citizen
Don Kerstetter, Trappe Landing Farm & Native Sanctuary
Dale Mumford, Circuit Rider/Town Manager for Caroline Co., Goldsboro, Henderson, and Marydel
Michael Price, Citizen
Ted Suman, Citizen

Team Coordinator

Susan Phelps Larcher

Water Act Section 319 Program and the Chesapeake Bay Trust. The curriculum includes lessons on water consumption, water conservation, and "taking action." In late January 2000, a Team member presented the lesson plan to teachers at the Maryland Association of Environmental and Outdoor Educators Annual Meeting.

Second Annual Wade-In

On June 17, the Choptank Team held its 2nd annual wade-in on the Tred Avon River in Oxford, Maryland. The event was held in conjunction with the Annual Boat Bums Cardboard Boat Races. Several dozen people waded into the water in front of more than 500 spectators. This "Sneaker Index" is a non-technical method of measuring water clarity. Retired Maryland State Senator Bernie Fowler initiated the event 13 years ago. The method measures how far the participants can wade into the river before losing site of their feet. The farther they go, the better the water clarity and water quality.

Response to the Draft Chesapeake Bay 2000 Agreement

The Choptank and the Upper Eastern Shore Teams co-hosted a public forum at Chesapeake College on March 2nd to give area businesses, environmental groups, and citizens a chance to learn about and comment on the goals and directions of the Chesapeake 2000 Agreement. Separately, the Choptank Team reviewed the draft agreement and developed recommendations of its own for consideration in the final agreement. In the process, the Team addressed past Chesapeake Bay agreements, their successes and failures, priority challenges, emerging issues, and the effectiveness of the Chesapeake Bay Program.

Team members Robert Wieland (kneeling) and Dave Nemazie record the results of the 2nd Annual Wade-In.

Roundtable to Develop the Agro-Ecology Center

On May 11, the Choptank Team co-hosted a focus group with the Upper and Lower Eastern Shore Teams to develop recommendations for the goals and objectives of the new Maryland Center for Agro-Ecology. The center is a Maryland non-profit corporation formed by a diverse coalition of agricultural, environmental, business, law, and legislative leaders. Its purposes are to encourage cooperative land preservation and Smart Growth initiatives, enhance constructive debate and the adoption of science-based public policy, and increase statewide public appreciation of the aesthetic and economic value of farms and forestlands. The discussion addressed previous Bay and agricultural program successes and failures, priority challenges, emerging issues, and changes that would improve the protection of water quality and agricultural partnerships in the Chesapeake region.

A barge dumps tons of empty oyster shells into Trappe Creek as part of the Choptank Team's oyster recovery efforts.

Public Outreach

Team members staffed displays at different events during 2000 to educate people about the environment, the Choptank watershed, and the Bay and to encourage people to participate on their local Tributary Teams. Members set up a booth at the Iron Man Triathlon in Dorchester County where information on the Team, the watershed, and the overall Tributary Strategy Program was made available to more than 1,400 people. At the Pickering Creek Harvest Hoe Down, families from the Easton area were given an opportunity to play the Bay Jeopardy Game and learn about the Team and the Chesapeake Bay.

2001 Priorities

With the signing of the Chesapeake 2000 Agreement in July, a wide array of initiatives are available for the Choptank Team to take up and tackle. As a result, the members will review the new agreement and revise their Team priorities. The Team will also assist in the development of the new Tributary Strategies. More fundamental initiatives for the Team in the coming year include reaching out to a wider array of community members to increase membership and the diversity of that membership and establishing greater communication ties with other watershed groups to link efforts and ideas.

During 2001, the Choptank Team will continue to work on some initiatives begun in 2000. The Team will track the progress of and continue to stress the need for a well-funded Cover Crop Program. With money left over from the 2000 CREP incentive program, the Team will encourage farmers in the Tuckahoe watershed to take advantage of this one time only, $200 per acre incentive to install streamside buffers on their farms. The Team will monitor the Trappe Creek oyster bar and add more spat to the bar in the spring of 2001, and Choptank members will advise the citizens and elected officials on the best methods of reducing pollution from septic systems. The Team foresees some new initiatives on the horizon. These initiatives include the following:

Public Drainage Task Force

During the December 2000 meeting, Dr. Wayne Bell from the Public Drainage Task Force presented the findings of the final report to the Team. Overall, the recommendations of the report seek to protect the economic well-being of the people who rely on the ditches while maintaining the environmental integrity of the land and water. Now that the report is complete, the Team plans to maintain its involvement in the Task Force and to expand its advisory role to one of implementation by identifying local areas that need assistance and working with local and state agencies to implement necessary improvements to the drainage system.

SAV Restoration Project

The Choptank Team plans to assist Dr. Laura Murray from Horn Point in a submerged aquatic vegetation (SAV) restoration project for the Choptank watershed. Dr. Murray has been studying the water quality and other conditions throughout the Choptank watershed to determine the best planting sites. One of the three potential sites is in Trappe Creek adjacent to the Team's oyster bar project. The Team has already assisted in the effort by writing an endorsement letter in September 1999 to the Chesapeake Bay Trust who has since funded the grant proposal. Support from the Team in 2001 may include helping grow and plant the SAV; educating local citizens, public officials, and Team members about the merits of SAV; and encouraging public understanding and participation in the project. The plantings are expected to take place in the summer of 2001 (pilot planting) and late spring of 2002.

The Choptank Team initiated a multi-Team cover crop letter to encourage Governor Glendening to increase funding for Eastern Shore farmers and to expand the program across the state.

TMDLs for the Choptank River

A Total Maximum Daily Load (TMDL) is the maximum amount of a given pollutant that a body of water can assimilate without violating water quality standards. The Maryland Department of the Environment is currently establishing TMDLs for the priority waters of the Chesapeake Bay. The Choptank River is one of these priority waters. A draft Choptank TMDL is expected to be completed in 2001. The Team plans to review this draft and engage the watershed community in the draft review process.

Ecological Economics Public Forum

During the November and December meetings, the Team reviewed the draft Interim Nutrient Cap Strategy. The purpose of this strategy is to overcome the shortfalls in meeting the nutrient goal, to offset the anticipated growth in load, to identify long-term issues and needs, and to transition to the new Tributary Strategies. During the draft Interim Nutrient Cap Strategy review, an initiative was recommended to determine the cost-benefits associated with nutrient best management practices. As a result, the Team is interested in establishing a public forum in 2001 to address ecological economics.

Trib Team Quick Fact

The Chesapeake Bay holds about 18 trillion gallons of water. Hundreds of years ago, oysters could filter the entire Bay in only 2-3 days. Now, due to their diminished population, it takes more than a year! You can help by creating an oyster garden off your dock or assisting in oyster restoration efforts.

Lower Eastern Shore

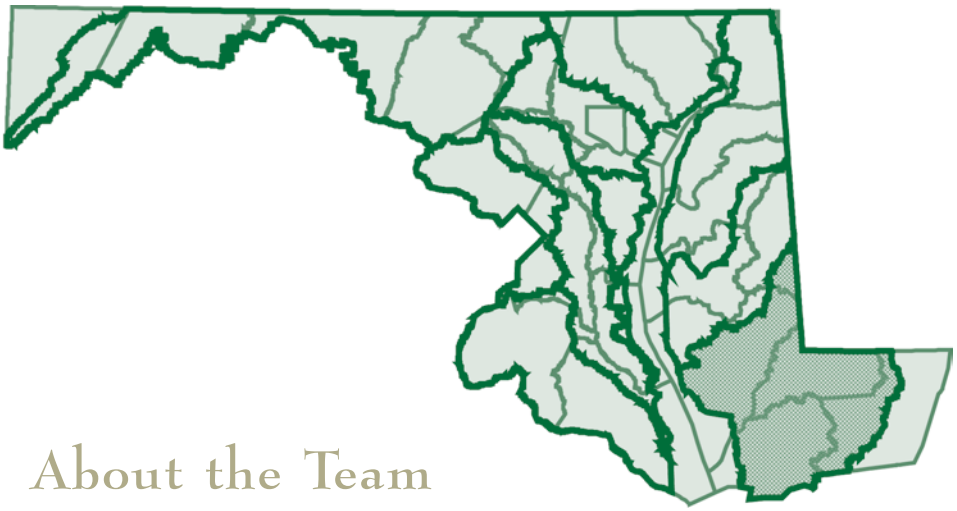
Watershed Heroes

Max Chambers

Max has been an active participant since the Team's creation in 1995 and is always ready to lend a hand for Team-sponsored activities and events. Originally from Indiana, Max moved to the Eastern Shore in 1965 after 20 years in the Army. Stationed in Baltimore, Max quickly recognized the intrinsic natural beauty of the Eastern Shore. His interest in the environment and ensuring a high quality of life began when he created an oyster hatchery in 1972, where he quickly recognized the tremendous positive impact native wildlife have on the Bay. Since then, Max has been a strong proponent of acknowledging the imperfect knowledge base of the environmental community and the need to learn more about the delicate ecosystems within the water column. Max hopes that through education, stewards will focus efforts on the crucial aspect of maintaining a strong benthic community that, in turn, will expedite the restoration of the Bay.

Jim Newcomb

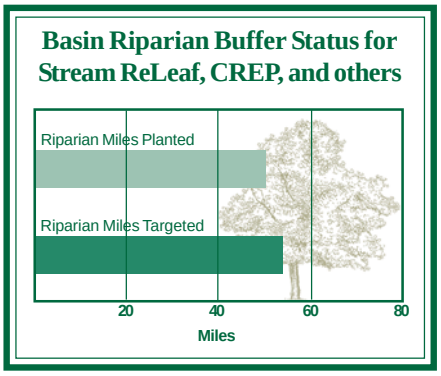
While a relative newcomer to the Team, Jim has already made his presence felt and provides invaluable energy to the Team's priorities. Born in Talbot County, Jim has spent nearly his entire life on the Eastern Shore. The few years he did stray across the Bay Bridge were to receive his undergraduate degree in geography and cartography and to work briefly in the Baltimore area. Jim works for the Dorchester Soil Conservation District and excels at helping farmers implement voluntary best management practices to manage their natural resources. This year, Jim took a leadership role in facilitating the Public Drainage Association Task Force and assisting in the successful tree grow-out station at Washington High School. While Jim enjoys the area's recreational opportunities, he takes pleasure in knowing that he is an active agent in implementing grassroots conservation projects and working with true stewards of the Chesapeake Bay.



About the Team

For the Lower Eastern Shore Tributary Team, 2000 was a year that showed the benefits of successful partnerships. Partnerships were utilized to combine resources, technical expertise, creative project ideas, and practical planning. These partners involved a variety of constituencies, including state legislators, local government officials, county planners, wastewater treatment plant operators, engineers, developers, realtors, waterfront homeowners, and the general public.

Based upon their autumn 1999 visioning process, the Team refined its mission and divided its members into several workgroups in order to best implement short- to medium-range priorities. The Team's three committees are Outreach, Membership, and Projects and Studies. Members meet regularly outside the scheduled Team meetings to implement their priorities. Team members have also gathered at several meetings this year to hear presentations on a variety of issues, becoming better informed so that they can educate others about what can be done to improve water quality in the Lower Eastern Shore watershed. As a result of the Team's involvement with basin stakeholders, five new members have joined the Team and active participation has had a remarkable increase.



Accomplishments

Chesapeake 2000 Agreement Outreach Meetings

Perhaps the most compelling aspect of the Chesapeake 2000 Agreement was the commitment by its drafters, the Principals Staff Committee, to include public comment and active participation throughout the agreement development process. The committee includes representatives from all six trustees of the Chesapeake Bay Executive Council. As testimony to their inclusiveness, several outreach meetings were conducted throughout the state to explain the intent of the new agreement and to solicit input from watershed stakeholders.

The Team hosted a public forum to present the elements of the Chesapeake 2000 Agreement before the Eastern Shore community and to obtain input

from businesses, environmental groups, and citizens. By all accounts, the public forum was a success as a variety of stakeholders attended, and issues raised by attendees were included in the final agreement.

Tree Grow-Out Station

To promote proactive natural resource stewardship practices, the Team sponsored a tree grow-out station. The grow-out station was created to supply urban and residential property owners with trees for planting in riparian areas. A total of 3,250 trees were put in 1 gallon pots by 75 Washington High School students over 4 days in early June. The seedlings were potted in anticipation for planting in late fall. The success of this project was in large part due to its wide array of partners. The pots were donated by local nurseries, and the trees were purchased from the John S. Ayton State Tree Nursery with grant funding provided by the Maryland Department of Natural Resources (DNR) and administered through the Eastern Shore Resource, Conservation, and Development Council (RC&D).

The 3,250 trees included bald cypress, green ash, loblolly pine, red oak, red osier dogwood, white oak, and sycamore. Before distribution, the Team advertised the availability for residents to acquire free trees and asked landowners to submit applications with a simple drawing of where they were going to plant the trees and how many they would require. More than 40 applications were received with enough trees requested to use all of the seedlings. On the day of the give away, Team members, RC&D staff, and students filled orders and loaded potted trees for the citizens who participated.

Roundtable to Develop the Agro-Ecology Center

Team members participated in a focus group with representatives from the Choptank and Upper Eastern Shore Teams to develop recommendations for inclusion in the goals and objectives of the new Maryland Center for Agro-Ecology. The Team discussion addressed previous Chesapeake Bay and agricultural program successes and failures, priority challenges, and emerging issues, the effectiveness of "measurements of success," and suggested changes that would improve the effort of protecting water quality and agricultural partnerships in the Chesapeake Bay region.

The Nanticoke River Wade-In

The Team hosted its 2nd Annual Wade-In along the banks of the beautiful Nanticoke River. Created 13 years ago by retired State Senator Bernie Fowler in the Patuxent River, volunteers wade out into a river until they can no longer see their feet. This "Sneaker Index" is a non-technical method of measuring water clarity that gets residents involved in their watershed. This year, Team members began the event with an overview of some of the natural wonders throughout the Nanticoke River watershed and described some of the pressures adversely affecting its water quality and habitat resources. Afterwards, everyone joined hands, walked out into the river, and reached a depth of 17 inches. Team members plan to return to the site and continue this yearly tradition to educate and involve area citizens and to develop a long-term indicator of the river's health.

Team Membership

Team Members

Phil Hager, Chair, US Army Corps of Engin.
William Bostian, Nature Conservancy
Russ Brinsfield, Wye Research and Education Ctr.
Glenn Carowan, Jr., Blackwater Wildlife Refuge
Robert Davis, Farmer
Ejigou Demissie, UMD Eastern Shore
Rick Dwyer, Wicomico Co. Planning Department
Jeff Fisher, Glatfelter Pulp Wood Company
Tom Fisher, Ag Chem, Inc.
Caren French, Somerset Co. Economic Develop.
Billie Laws, Worcester Forestry Board
Dave Mister, Maryland Department of Agriculture
Katherine Munson, Worcester Co. Comp. Plan.
Jim Newcomb, Dorchester County SCD
Tee O'Connor, Nanticoke Watershed Alliance
A. W. Owen, Citizen
Michael Sigrist, Natural Resources Cons. Service

Participants

Angela Baldwin, Maryland Conservation Corps
Max Chambers, Citizen
Kristin Clear, Resource Conservation & Devlpt.
Ilia Fehrer, Citizen
W. Turp Garrett, Citizen
Nancy Howard, DNR, Public Communications
Don Jackson, Chesapeake Bay Foundation
Joan Kean, Somerset County Planning Department
Tom Weiss, Maryland Office of Planning

Team Coordinator

Sean McGuire

Spray Irrigation Tour

In order to clarify some of the conceptions and misconceptions concerning spray irrigation facilities used by municipal sewage treatment plants, the Team scheduled an August tour to learn about spray operations and their environmental impacts. At the start of the tour, attendees were provided an orientation describing several aspects of sewage treatment plants, including capacity in gallons per day, holding facilities, siting relative to housing, and conservation of groundwater through treatment practices.

The tour visited several sites where members listened to individuals who either helped to develop or had knowledge of the facilities. The sites were chosen to represent various available irrigation systems and to give a broad perspective of current practices. Approaches that were highlighted included discharging onto farmland as part of the irrigation system and onto golf courses, one of which is in close

proximity to a 750-home community.

Presenters neither recommended nor opposed practices but merely highlighted what was installed and their impacts. As a result of the tour, attendees felt that they were better informed about spray irrigation disposal of treated water, saw a need for regulatory reform in some areas, and recognized that spray irrigation is a beneficial use of the nutrients remaining in processed water.

Public Drainage Task Force

In July 1998, the Choptank Tributary Team wrote a letter to the DNR Secretary that pointed out a conflict between non-point nutrient and sediment controls that slow down water movement and the need for adequate land drainage through established public drainage systems. The letter recommended the development of best management practices through interagency consultation between DNR, the Departments of the Environment and Agriculture, the State Highway Administration, and local jurisdictions. From this letter, the Governor recognized the importance that public drainage associations (PDAs) play in the region's natural resources and commissioned a Task Force to create a "win-win" solution for the agricultural community and the Eastern Shore environment.

In 1999, Task Force members were appointed from 23 constituency groups, including representatives from the Lower Eastern Shore and Choptank Teams, PDAs, environmental groups, and other watershed stakeholders. This broad base allowed a greater exchange of information and ideas, greater buy-in of proposed solutions, and better consideration of issues beyond those associated with PDA operations and maintenance. Their mission was to identify the ways and means of protecting the well-being of people who depend on effective public drainage – farmers, residential property owners, highway users, and others – while protecting and enhancing the natural resources affected by the public ditches.

The Public Drainage Task Force Report was completed in October 2000 and will be presented to the Governor's Chesapeake Bay Workgroup in early 2001. This effort exemplifies the commitment of the Tributary Teams to bring significant local and regional watershed issues to the attention of state agencies and to identify mutually agreeable solutions to often difficult natural resource use challenges.

Lower Eastern Shore Conservation & Restoration Action Strategy

In early 1998, the U.S. Environmental Protection Agency issued a Clean Water Action Plan calling for a broadened approach to dealing with water quality and natural resource concerns. States were invited to respond by first producing a Unified Watershed Assessment and then developing a responsive Watershed Restoration Action Strategy (WRAS) for areas identified as needing restoration. The mission of WRAS is to unite the implementation of existing Tributary Strategies, Total Maximum Daily Load requirements, aquatic health and habitat restoration, and other goals of the Clean Water Action Plan. After assessing all of the state's watersheds and prior to developing definitive guidance on how to develop a WRAS, DNR initiated a pilot project in the Lower Eastern Shore basin to help focus attention on particular small areas, examine the need for restoration, and identify restoration options.

Members learn about municipal sewage treatment plant techniques during the Team's Spray Irrigation Tour in August.

Throughout 1999 and part of 2000, Team members met with state and local agency representatives to guide the development of what became known as the Lower Eastern Shore Conservation and Restoration Action Strategy (LESCRAS). This Steering Committee had two objectives. The first was to narrow the focus of the Unified Watershed Assessment analysis from a comparison of watersheds on a statewide basis to a comparison of watersheds within a single basin. After preliminary evaluations, the Steering Committee identified 12-digit sub-watersheds of three major watersheds – the Lower and Upper Pocomoke and the Lower Wicomico – as most in need of restoration work.

Trib Team Quick Fact

The Eastern Shore and its tributaries have a rich and treacherous history. In the early 18th Century, Edward Teach, aka "Blackbeard," used the hidden coves of the Eastern Shore to prepare his ship for pirating before plundering vessels throughout the Virginia Capes.

The second task was to identify specific issues of concern and address them with existing state, local, and private programs. Indicators were developed beyond those used in the Unified Watershed Assessment in an effort to relate the work more directly to Lower Eastern Shore issues. The study culminated in the development of a report entitled "LESCRAS: Program Description and Atlas of Indicators," which highlights the process and evaluates the indicators in each watershed.

Manokin WRAS

Based on lessons learned in developing LESCRAS as well as federal guidance, the state invited local governments to become partners in developing WRAS strategies in other watersheds. These strategies will identify the most important causes of water pollution and degradation, detail the actions necessary to address these problems, and establish milestones for their implementation.

The Manokin River sub-watershed is one of five WRAS strategies currently under development. The effort began in mid-2000 when Somerset County received federal grant funding and state technical assistance. The compilation of available data into a detailed watershed characterization, the first product of the study, will help the county identify information relevant to the WRAS process.

Since the success of the WRAS project is dependent upon coordinated efforts by local, state, federal, and private resources, a hallmark of the Tributary Team Program, Team members have assisted planners with their previous work and experience within the watershed. Further, the Teams will assist in the public review, input process, and outreach activities, including a 2001 stream corridor assessment. The county is anticipating that a draft WRAS will be available by the end of 2001, and full implementation is projected to occur by 2002.

WRLI Program

Throughout 2000, several Lower Eastern Shore Tributary Team members and staff participated in the Water Resource Leadership Initiative (WRLI) Program. Created by the University of Maryland's Institute for Government Service, the program's mission is to foster a network of leaders who will develop better communication, facilitation, and mediation skills and apply those skills to protect and improve water quality. The program is a 2-year commitment and includes a wide variety of stakeholders who will utilize learned skills to build consensus around contentious issues.

Local residents "wade in" to their treasured Nanticoke River. Participants reached a depth of 17" this year and hope for more in 2001!

In 2000, a total of three Lower Eastern Shore Tributary Team members plus the Team coordinator completed their second year in the WRLI program. As participants, Team Member Jim Newcomb and Coordinator Christy Mills used their consensus-building skills to help facilitate the Public Drainage Task Force under the guidance of WRLI Program Manager Phil Favero and PDA Task Force Chairman Dr. Wayne Bell.

In addition, Team Member Katherine Munson focused on education efforts regarding roadside ditch maintenance and a best management practice demonstration project. Team member Tee O'Connor worked to build support for and organize a conference on innovative design standards for rural development. While they were finishing up their WRLI term, Team Participant Nancy Howard and Coordinator Sean McGuire were just beginning the program and are currently working on their practicums.

2001 Priorities

Outreach & Member Involvement

Two major components of past success are the Team's innovative approaches in partnering with area stakeholders and energizing residents to become more active in restoration and preservation efforts. To continue this trend, the Team developed a two-stage action strategy with a goal to increase current membership involvement by 20% and the addition of 5 new members. The first step is to enhance relations with other Eastern Shore organizations and to increase their awareness of the Team's activities. Second, the Team will design and conduct an outreach and public focus project to increase awareness on water resource challenges.

Living Resources Assessment

The Team believes that before living resource restoration activities can be implemented, members need to fully understand the ecological processes occurring in the water column. As such, the Team will increase its education on living resource needs and their relationship to nutrient reduction. For example, one study, begun by Team Participant Max Chambers, looks at the nutrient and soil requirements for submerged aquatic vegetation. A possible outcome of this research would be a public workshop to educate policymakers and the public.

Chesapeake Forest Acquisition

The Team plans to be involved in the Chesapeake Forest project, which involves 29,000 acres of Eastern Shore lands. The Team will keep apprised of current activities, actively participate in the proposed Management Plan Committee, and assist in public outreach efforts when a management plan is released.

Lower Potomac

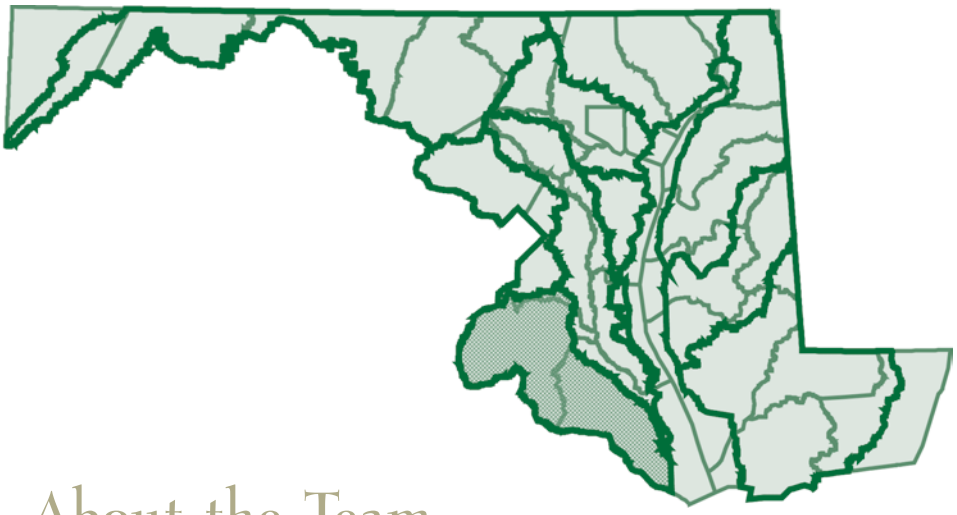
Watershed Heroes

Andris Bilmanis

A Latvian native, Mr. Bilmanis witnessed the benefits of multi-jurisdictional approaches to protect the Baltic Sea. When similar concepts were envisioned for the Chesapeake Bay, he became actively involved in preservation efforts. In 1949, he moved to the area, and he and his family began vacationing near Cobb Island. Mr. Bilmanis vividly recalls its bountiful ecosystems and watching his children wade out to the islands, passing endless submerged aquatic vegetation beds and "catching fish with their bare hands." In the 1960s, pollution severely degraded these waters. Since then, Mr. Bilmanis has worked with local stakeholders and the county government to construct a wastewater treatment plant to replace failing septic systems and has worked tirelessly to improve the area's water quality and habitat. Now, the waters are cleaner, the once abundant wildlife are returning, and he envisions a time when residents will enjoy the recreational opportunities and beautiful natural resources enjoyed years ago.

Chris Tanner

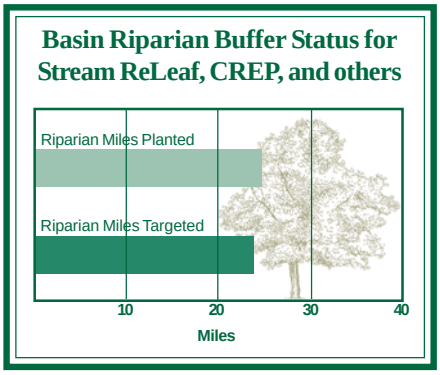
Professor Tanner provides an invaluable link between Team priorities and St. Mary's College and its many resources. Chris received his doctorate degree in marine botany from the University of British Columbia. He then began teaching at the college and working on various salt marsh restoration projects. Chris later studied tropical sea grasses and earned his post-doctorate in tropical botany. All of these studies prepared him to initiate a project to investigate how land use efforts affect aquatic natural resources in the St. Mary's River. Chris was on the ground level when the college partnered with local, state, and federal agencies to secure EPA funding for the project. Since then, the Team has been integrally involved in the project and, due to these partnerships, funding was recently reauthorized. Chris also secured several students to conduct research projects for the Team. Chris lives with his wife, a high school biology teacher, and their two sons.



About the Team

As in past years, the Lower Potomac Tributary Team placed the serious issues of shore erosion and sedimentation high on its agenda. Accordingly, the Team was involved in several related policy and project initiatives. First, the Team promoted and participated in the Shore Erosion Task Force and worked with the U.S. Army Corps of Engineers and Charles County on a habitat restoration project near Cobb Island. As for implementation projects, the Team helped with an erosion stabilization project in Historic St. Mary's City.

The Team did not just continue past efforts but took on new and challenging initiatives. The Team pursued several outreach opportunities throughout its basin, worked with area schools and education centers, and once again hosted its Potomac Wade-In. As for policy issues, the Team investigated potential marina best management practices and reviewed several important studies on the negative environmental impacts of growth and development on two of its major sub-watersheds.



Accomplishments

Sedimentation and Shore Erosion

Shore erosion is one of the most significant problems facing Maryland's diverse coastal environment. About 31% of Maryland's 4,360 mile Chesapeake Bay coastline is experiencing some degree of coastal erosion, resulting in the loss of approximately 260 acres of land per year. Because of these alarming figures, the Lower Potomac Team considers shore erosion a top priority.

In August 1999, Governor Glendening appointed a Shore Erosion Task Force, and charged it to investigate shore erosion in Maryland, its causes and effects, effective solutions, and available resources. Team members and staff participated throughout the Task Force's deliberations. In January 2000, the Task Force published a set of nine recommendations to be implemented under the umbrella of a Comprehensive Shore Erosion Control Plan. The Comprehensive Plan is designed to move Maryland from its current piecemeal approach to an

approach that quantifies regional shore erosion impacts and uses sound planning, based on best available data, to achieve the objectives outlined by the Governor's Task Force.

The Team plans to be an active partner with the Maryland Department of Natural Resources (DNR) and St. Mary's County as they collect and analyze data, prioritize erosion control needs, strategize effective sediment control approaches, and conduct public outreach and education initiatives to increase the understanding and awareness of erosion control issues and solutions. The Team hopes that this approach will be used as a template for similar projects and will assist in planning and prioritizing areas in need of assistance on a statewide basis.

St. Mary's Shoreline Stabilization Project

A second major shore erosion project was the development of a stabilization project near St. Mary's College. In 2000, the Maryland Department of the Environment awarded Historic St. Mary's City mitigation funds to create approximately 4.6 acres of tidal marsh along 7,400 feet of shoreline. The Historic St. Mary's City shoreline marsh creation project is expected to start construction in spring 2001.

In addition to shore erosion abatement, the project will provide tremendous natural resource and habitat benefits. All too often, structural shore erosion approaches are used in stabilization projects that harm vital wildlife habitat. Accordingly, project design drawings will be reviewed to ensure that beach accessibility for macroinvertebrates, visual aesthetics, and cultural resource preservation are incorporated into the design.

Cobb Island Project

On June 28, 1999, Team Member Andris Bilmanis and the Team developed a habitat restoration and shore erosion abatement proposal. If awarded, the project will restore remnant islands off Neale Sound in the manner of an offshore breakwater as they existed in the 1950s. The purpose of the project will be to slow the Potomac River water as it reaches the mainland in order to reduce shoreline erosion, river bottom migration, and the loss of submerged aquatic vegetation. It will also create and protect more than 10 acres of shallow water habitat for fish, turtles, crabs, and other small animals.

Additionally, the project may provide opportunities for off-shore environmental education and recreation. Nearby Southern Park has a fishing pier, allows canoeing and kayaking, and maintains facilities for wildlife and bird watching, and other outdoor activities. Ultimately, the Team would like to recreate the conditions from years ago when citizens could wade almost completely across the sound and enjoy watching underwater communities. From his own personal accounts, this type of abundant ecosystem was present as recently as the mid-1960s.

Team Membership

Team Members

Bob Boxwell, Chair, Friends of the Chesapeake
David Waring, Vice-Chair, Business
Susan Adams, Citizen
Andris Bilmanis, Citizen
Gilbert Bowling, Farmer
Alan Cruikshank, Charles County Soil Cons. Dist.
Curtis Dalpra, ICPRB
Beth Horsey, MD Deptartment of Agriculture
John Houser, Business
Edward Krueger, Potomac Electric Power Co.
Jerry Michael, Charles County
James Owens, Maryland Farm Bureau
Robert Paul, St. Mary's College of Maryland
Nancy Paige-Smith, St. Mary's College of MD
Robert Thompson, Citizen
Sue Veith, St. Mary's County Dept. of Planning
Beverly Warfield, Prince George's County
Karen Wiggin, Charles County Office of Planning
George Wilmot, State Water Quality Adv. Comm.
Bruce Young, St. Mary's County SCD

Participants

Robert Boyd, Business
Gene Davies, So. MD Assoc. of Realtors
Frank Houser, Business
The Honorable James Jarboe, Charles County
Mark Mattiucci, Point Lookout Marina
Mary Owens, Chesapeake Bay Critial Area Comm.
Fluellen Sayf-Uddin, Citizen
Bill Shreve, St. Mary's Co. Metro. Commission
Christopher Tanner, St. Mary's College

Team Coordinator

Sean McGuire

In July, the U.S. Army Corps of Engineers and DNR conducted a preliminary evaluation of the proposal. In November, the Charles County Commissioners heard testimony on the project from both investigating agencies and Mr. Bilmanis. The county commissioners determined from the testimony that the project should be formally evaluated for its merits and said that they will send a letter to the Corps of Engineers to request a feasibility study. At the same time, the Team invited the Corps of Engineers to provide a presentation before all Team members on the project's viability, which was well received. The Team will actively continue its efforts in the coming year to ensure the project's full implementation.

After partaking in the Potomac River Wade-In, participants placed more than 300,000 oyster spat onto submerged pallets. When matured, the oysters placed by volunteers will be transplanted onto a nearby oyster bar.

Mattawoman Creek Watershed Project

Mattawoman Creek is an outstanding natural resource. It is one of the most productive anadromous fish spawning and nursery streams in the entire upper Chesapeake Bay, yet most of it lies within the Charles County's development district. The Team is concerned that this development is adversely affecting both the water quality and the flow regime of the creek. Due to its value as a natural area and the increasing loss of forest cover, the Team formed a workgroup in 1999 to study the Mattawoman and to work to improve its water quality and maintain its natural state.

In the past year, the Mattawoman Workgroup reviewed the available water quality data for Mattawoman Creek and established a volunteer water quality monitoring group. The volunteer water quality data will be used to identify sources of pollution in the watershed, and the project will also serve to increase public awareness about the importance of protecting Mattawoman Creek. The detailed water quality data obtained by the Smithsonian Environmental Research Center (SERC) under a 3 year contract with Charles County were helpful in identifying monitoring sites. Because the SERC monitoring continued through June 2000, the workgroup decided to postpone volunteer water quality monitoring until the final SERC report was available and reviewed. In January, the workgroup used information from the second year SERC report to recommend benthic sampling sites in the Mattawoman watershed for DNR's Stream Waders Program activities in 2000.

The Mattawoman Workgroup is also addressing stormwater runoff issues and met with a Charles County engineer to learn about stormwater management designs for paved parking lots. A Team member has been appointed to the Mattawoman Citizens Advisory Committee by Charles County and will keep the workgroup informed on the county's efforts to protect the creek. Local government has been crucial in the workgroup's success. Karen Wiggen, environmental planner and Team member, has provided valuable information and advice to the group.

Trib Team Quick Fact

The Lower Potomac River Basin has one of the largest Blue Heron rookeries (breeding colonies) on the entire East Coast. Rookeries can consist of hundreds of herons or just a single pair. Herons couple after conducting beautiful courtship rituals in early spring.

St. Mary's College

The Team partnered with St. Mary's College on several implementation projects and nutrient abatement policies. On April 15, the Team and area stewards sponsored a BayScapes project on college grounds. BayScapes is a technique that uses native plants to abate stormwater runoff, promote wildlife habitat, and provide lower maintenance aesthetics. Postponed due to last summer's drought, the project was nonetheless completed prior to graduation ceremonies.

Over the past year, research projects by St. Mary's College students Debbie Kemp, Maggie Craig, and Angella Walker investigated how many marinas in the Lower Potomac region had operating pump-out stations available to boaters. With this knowledge, the Team will promote pump-out stations and other marina and boating related best management practices to abate nitrogen pollution in area water bodies.

Outreach and Education Activities

Educating the public on how every day activities impact the environment is a high priority for the Team. As such, the Team aggressively pursued a variety of outreach activities. Workgroup members developed a detailed calendar of events throughout the watershed, such as county fairs and area celebrations. Members attended the events and showcased best management practices. In order to promote greater participation throughout their basin, members also identified area community associations for future education efforts.

In addition to its outreach efforts, the Team sponsored its 2nd Annual Wade-In into the Potomac River at the Potomac Electric Power Company's (PEPCO's) Morgantown plant. By all accounts, the event was a great success. More than

60 people participated in the wade-in, including Maryland State Delegates John F. Wood, Jr. and Thomas E. Hutchins and a representative from Senator Barbara Mikulski's office. These participants were able to wade into the river for 27 inches before losing site of their feet.

In addition, just as in the previous year wade-in volunteers placed more than 300,000 oyster spat donated by PEPCO onto pallets in the Potomac River. The spat will mature over the coming months and eventually be transplanted onto a nearby oyster bar.

2001 Priorities

Oysters Restoration

As oysters number less than 2% of their historic population, their restoration is a key element to the Bay's ecological health. At the October meeting, the Team went to the Piney Point Aquaculture Center for a site visit and became interested in sponsoring an oyster restoration project.

At the Aquaculture Center, Team members learned more about oyster restoration and set oyster replenishment as a top implementation priority. Team members will identify potential partners, including DNR and the Chesapeake Bay Foundation, and submit a Tributary Team Habitat Restoration Grant for funding. They plan to work with local watershed and community associations to outreach to area residents and give them the opportunity to see firsthand how critical oysters are to the Chesapeake Bay.

Outreach and Education Efforts

In addition to previous outreach efforts, the Team plans to contact area schools and explore innovative ways to link students with their environment. In the past few years, several Tributary Teams have implemented tree grow-out stations. Students pot seedlings and nurture them throughout the summer. In the fall, students plant the trees and provide stock for other plantings throughout the state. In addition, the Team plans to partner with DNR to sponsor several school-related activities that incorporate environmental activities into the school's curriculum.

Another outreach technique is to develop public service announcements for area radio and television stations. These mediums are required by law to provide free air time for educational purposes. Through previous implementation efforts, the Team has developed good working relationships with various radio stations throughout the watershed. The Team will create several public service announcements regarding approaches and opportunities that listeners can use to reduce nutrient and sediment pollution in their homes and neighborhoods.

Clean Marinas

Over the past year, Team members were educated on nutrient pollution issues related to marina operations and boating. The Team heard a presentation from a DNR Clean Marina Program representative, who works with marina operators to promote best management practices to abate nutrient pollution from boats. Since there are several marinas within the Lower Potomac watershed, the Team will promote the Clean Marina Program to area marina owners.

Mattawoman Creek Project

The final SERC report was received in late 2000, and its review is one of the Team's top priorities for 2001. The Mattawoman Workgroup will also review the DNR Biological Stream Survey Stream Waders report on the 2000 biological sampling in Mattawoman Creek when it becomes available.

Using the results from these reports and other information, the workgroup will identify sites for volunteer chemical water quality monitoring and work to get the monitoring effort underway. The workgroup will also continue to identify stormwater management problem areas and work with the county government on these important environmental issues.

Team members have traditionally held their August meeting "out of the office" by enjoying a skipjack trip on St. Mary's River. This year, members invited local elected officials and DNR Secretary Sarah Taylor-Rogers to discuss Team restoration projects and activities.

Lower Western Shore

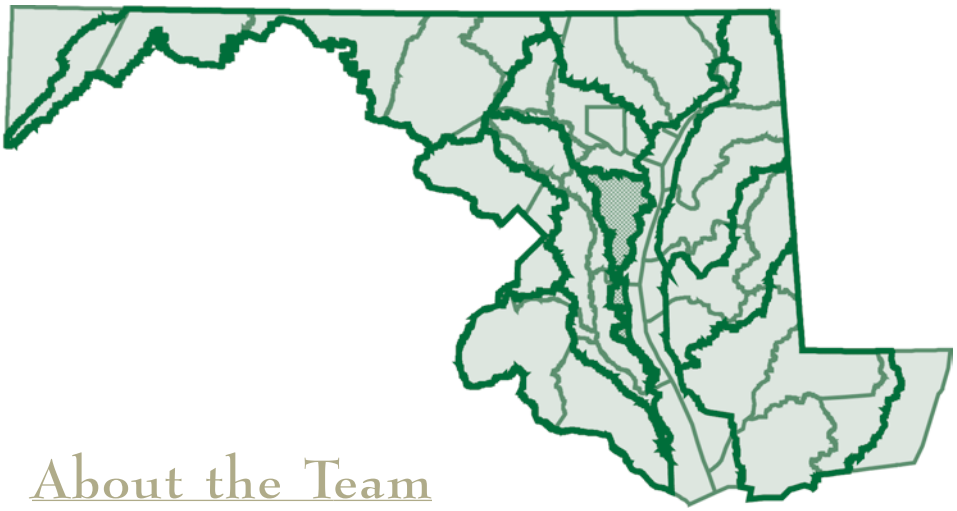
Watershed Heroes

John Flood

John's heritage in the South River region runs as deep as his own passion toward restoring his beloved watershed. John is the 4th generation of his family to be born and raised along the South River. Consequently, he has been an avid outdoorsman his entire life. Two years ago, John worked with Team members and activists to reinstate the South River Federation as the advocate and watchdog for the watershed's protection. He has spearheaded several successful projects, including the nationally acclaimed oyster restoration project in Harness Creek. To date, 1.5 million oysters have been placed on a reef hundreds of feet long. The key to the project's success was the involvement of area residents who hung oyster buckets on more than two-thirds of the creek's docks. John plans to expand this project even further, hoping to create an oyster reef thousands of feet long. Due to his extraordinary efforts, John was nominated for the Chesapeake Bay Foundation's Conservationist of the Year. Snap.

E. Steuart Chaney

Born and raised in South Anne Arundel County, Steuart became closely connected with the water while crabbing on the West River. His time on the water stimulated an interest in the maritime business, which led him to buy Herrington Harbor Marina. Since then, he has taken a leadership role in helping to restore his local waterways and to advocate environmentally sound boating practices. Steuart believes that the lifeblood of the maritime industry is clean water. His marina was one of the first to be certified under the state's Clean Marina Initiative, and he is an active member of the Herring Bay Clean Watershed Initiative. Promoting no discharge zones since the mid-1990s, Steuart served on DNR's Sensitive Areas Commission. Most recently, he helped to remove 20 derelict boats in Rockhold Creek and is a major contributor to the Team's oyster restoration project.

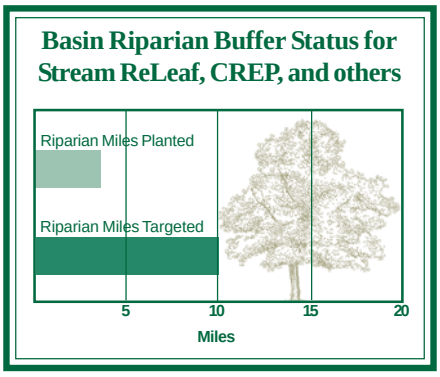


About the Team

In the past, the Lower Western Shore Tributary Team placed habitat restoration, reforestation, and local watershed organization development as its highest priorities. In 2000, the Team took a giant leap forward by combining all three of these priorities to maximize its restoration efforts. Specifically, the Team sponsored a tree grow-out station at Bates Middle School where 7th grade students potted seedlings for future plantings.

Members also continued their watershed organization efforts in the Annapolis City area, South River watershed, and Herring Bay. In Herring Bay, participants completed their 1999 watershed survey, shared their report with elected officials and the public, and developed strategies for 2001 projects.

The Team also took on several challenging policy issues. A top priority was addressing the serious issue of air pollution and its impacts on water quality. The Team also developed innovative approaches regarding how counties are growing and the impacts of growth. Lastly, the Team continued previous efforts to abate nutrient loading from marina and boating activities by promoting best management practices and potential legislation.



Accomplishments

Bates Tree Grow-Out Station

The Lower Western Shore Tributary Team has always encouraged the participation of local schools in habitat restoration activities. Yet, in the past, the Team only involved students in the actual tree plantings. In 2000, the Team actively moved to change this approach.

In 1999, the Team secured grant funding from the U.S. Forest Service and the U.S. Environmental Protection Agency to establish a tree grow-out station at Bates Middle School. The grow-out station approach was first implemented in 1999 by the Upper Western Shore Team at Harford Vocational Technical High School and was a tremendous success. At a grow-out station, students obtain seedlings (usually from the Maryland State Forest Tree

Nursery), pot the seedlings, and attend to the trees throughout the summer before supplying them to local reforestation projects.

On May 3, Annapolis Mayor Dean Johnson, city and county representatives, elected leaders, state foresters, and Team members kicked-off the grow-out station initiative by helping pot trees and explaining to the students the importance of planting trees in their watershed. For 3 days, 7th grade students, mainly from Mrs. Jill Twetten's science classes, potted 6,500 seedlings with the help of teachers, staff, and Team members. The students nurtured the trees at the school and at Anne Arundel County Community College.

Fortunately for the students, the past summer was extremely wet and provided the perfect conditions for tree growth. The seedlings, starting at only a foot long, grew quickly, and some species reached more than 6 feet in height!

During the fall, thousands of the trees were dispersed throughout Maryland for habitat restoration projects and to other schools for local tree plantings. The remaining trees will provide stock for tree plantings on the grounds of Bates Middle School as a gift from the now 8th grade graduating class. In addition to potting trees, the Team partnered with the Chesapeake Bay Foundation (CBF) to provide even more restoration opportunities for the students by growing underwater grasses in their classroom.

Reforestation Site Location Studies

With all the trees being grown at Bates Middle School, the Team identified the need to develop a Reforestation Site Location Plan. Team members investigated potential reforestation sites throughout their watershed and quickly realized the daunting task before them. To help focus their energies, the Team decided to concentrate on one sub-watershed – the South River.

The Team formed a Reforestation Committee and undertook a two-pronged approach to develop a reforestation strategy. Team Member Earl Bradley conducted the first approach. He studied local tax maps and maps identifying potential reforestation opportunities and developed a list of homeowners with streamside property that may be willing to plant trees on their property.

The second approach was a study developed through several partners, including the Maryland Department of Natural Resources (DNR), American Forests, Anne Arundel County, and the South River Federation. Mike Herrmann of DNR identified streams within the South River watershed that met Stream ReLeaf Program criteria, and then he and Reforestation Committee members identified six sites that indicated a high level of reforestation potential. A map was subsequently generated and shared with the Anne Arundel County Office of Planning and Zoning for review and input. The Team hopes that this multi-jurisdictional approach to identify reforestation sites will become a model for other Tributary Teams.

Team Membership

Team Members

Ginger Ellis, Chair, A. A. Co. Plan. & Code Enforc.
Steuart Chaney, Vice-Chair, Herrington Harbor
Rick Bailey, Marrick Properties, Inc.
Earl Bradley, Citizen
David Brownlee, Calvert Co. Office of Planning
Peg Burroughs, Chesapeake Environ. Assoc.
John Colhoun, Farmer
David Correll, Smithsonian Environ. Research Ctr.
John Flood, Citizen
Catherine Ford, Citizen
Louis Gardner, Gardner Sand & Gravel
Lillian Griffith, A. A. Co. Soil Conservation Dist.
Joseph Haamid, NRCS
Bud Jenkins, Citizen
Tina Lorenzen, U.S. Naval Academy
Don O'Neill, MD Dept. of Natural Resources
Marcia Patrick, City of Annapolis
Herb Reed, Cooperative Extension Service
Jim Stone, Business
Keith Underwood, Underwood & Assoc.
Herbert Wayson, Maryland Farm Bureau
Joan Willey, Sierra Club

Participants

Bob Dickman, Citizen
Eleanor Dickman, Citizen
Catherine Frate, Citizen
Ruth Goldstein, Community Media
Carol Jelich, Master Gardner
Terry Lehr, Save Our Streams
Drew Koslow, South River Federation
Janis Markusic, A. A. Co. Plan. & Code Enforc.
Anne Pearson, Alliance for Sustainable Comm.
Joann Robinson, Citizen
Carla Ruffin, Annapolis High School
Vivienne Trawick, Rosehaven Community

Team Coordinator

Sean McGuire

Magothy River Bogs Complex

Following the discovery of expanded, globally-rare bog ecosystems in the Magothy River watershed by Team Member Keith Underwood, a group of active citizens began working on a strategy to ensure the long-term protection of these critically sensitive ecosystems. The Bog Committee is made up of several Lower Western Shore Tributary Team members, state delegates, Anne Arundel County Councilmen, and representatives from various state and local government agencies, Magothy River Land Trust (MLRT) members, and community activists.

Bates Middle School students pot seedlings for future tree plantings throughout their watershed.

In late spring, the Maryland Department of the Environment took the first step toward preserving the bogs by adopting emergency regulations to designate the bog areas as nontidal areas of special state concern, thus increasing the regulated buffer from 25 feet to 100 feet. Since then, the Bog Committee has worked with the Anne Arundel County Council to draft legislation to further protect the bogs and established a subcommittee to identify funding sources and priority areas for acquisition.

To date, DNR has purchased two lots and deeded them to the county with the MLRT holding the conservation easement. Throughout the process, the Team and its partners have been educating the public and fostering a heightened awareness of the significance of these highly valuable bog ecosystems.

Herring Bay Initiative

In 1998, the Team began its commitment to develop and support local watershed organizations by creating the Herring Bay Clean Water Initiative (CWI). Since then, the CWI and its active residents have initiated several exciting projects and this year was no different.

In 1999, the CWI and Save Our Streams conducted a stream survey where more than 60 residents explored their watershed and identified potential restoration projects and high quality areas to be preserved. This year, the CWI announced their findings at a dinner sponsored by the Lower Western Shore Tributary Team, Save Our Streams, and Herrington Harbour South Marina. Residents, elected officials, and county officers listened to the report's details as well as other environmental activities throughout the Herring Bay watershed.

Team Vice-Chair Steuart Chaney has taken the lead to eradicate the environmental and recreational hazard of derelict and abandoned boats. Natural Resources Police or the county remove boats that are a navigational hazard or are clearly leaking fluids. Unfortunately, the procedure for having a boat removed that is not an immediate danger is lengthy and arduous. The Team invited Natural Resource Police officials to discuss the issue and subsequently recommended that DNR submit legislation to the General Assembly that would reduce the waiting period.

Another outreach activity sponsored by the Team and CWI was the 3rd Annual Wade-In. Created by retired State Senator Bernie Fowler for the Patuxent River in the early 1980s, wade-ins invite residents to walk out into the water until they can no longer see their white tennis shoes. On June 11, local and state elected officials and scores of local residents waded out into Herring Bay all the way out to a level of 26 inches, up 2 inches from last year. The CWI is looking forward to using these innovative education and outreach methods to encourage the preservation of their treasured natural resources.

Green Power & Energy Efficiency Executive Order

For more than a year, Team members have been concerned about the fact that up to 27% of the total nutrient loading into the Bay emanates from air pollution. Accordingly, the Team established an Air Committee to further investigate the role of air pollution and to develop recommendations to address this serious pollution source.

Committee members held informal meetings with the Maryland Energy Administration and DNR's Green Building Program to develop options for reducing airborne nitrogen pollution. In April, the Team sent a letter to Department of General Services' Secretary Peta Richkus that explained their intent to create an executive order that addressed both the production and consumption of electricity. To abate the negative environmental impacts of fossil fuel burning power plants, the first part of the executive order would require the state to buy its electricity from cleaner sources of electricity. For Team members, clean energy sources are wind, solar, biomass, and methane from landfills. The second part would reduce the consumption of energy by requiring the state to institute energy efficiency techniques and approaches for the design, construction, operations, maintenance, and deconstruction of all state-owned and -leased buildings.

At the Tributary Team meeting with the Governor on May 11, Governor Glendening agreed to commit his administration to develop the executive order. Over the following months, Team members and staff from various state departments and agencies drafted the Executive Order on Green Power and Energy Efficiency. The executive order is expected to be signed by the Governor in early 2001.

Workgroup members also worked with Anne Arundel County to sponsor an informal meeting between county building officials and Maryland's Green Building Program. They discussed ways to incorporate methods to decrease energy consumption in county buildings and to increase building design and operational efficiency in future building and construction projects.

2001 Priorities

Septic Systems and Stormwater Management

In 2000, the Calvert County Environmental Commission, Board of County Commissioners, and Health Department initiated and conducted a "Pump for the Bay" contest, offering prizes to people that had their septic system pumped-out during a given time period. The purpose of the contest was to educate property owners about the importance of pumping-out their septic systems regularly and to encourage them to start now. Pumping-out septic systems reduces nitrogen pollution, prevents septic system drains from failing, and saves property owners money on repairs and replacement of septic systems.

The state estimates that septic systems contribute about 19% of the basin's non-point source of nitrogen pollution. If the Team is to meet its nutrient reduction goals, pollution from septic systems must be reduced. The contest was advertised through several media sources, including mailing out the brochure "Pocket Guide to Your Home Septic System."

By all accounts, the contest was a great success. In 2001, the Team plans to implement similar approaches throughout the watershed to reduce nutrient pollution from septic systems. Further, the Team will also turn its attention to the larger discussion of how to abate stormwater runoff and other urban-related non-point nutrient pollution sources.

Members of the Herring Bay CWI hope that through their efforts local streams will be healthy and provide bountiful habitat for native fish and wildlife.

Oyster Restoration Project

In their continuing efforts to preserve and restore the environmental integrity of their watershed, the Herring Bay CWI, through the Team, applied for and received funding from the Tributary Team Habitat Restoration Grant to create an oyster bar in Herring Bay. Members partnered with DNR, Piney Point Aquaculture Center, CBF, and Save Our Streams to receive funds that will establish a 1-2 acre oyster bar near Herrington Harbour South Marina. The bar will be created during the winter of 2001.

At the 2001 Annual Wade-In in June, CBF will conduct an Oyster Gardening Workshop to train residents how to raise oysters off their docks. The Aquaculture Center will provide the oysters. Residents will nurture the oysters throughout the summer and place them on the bar in early fall. Subsequent to the oyster dispersal, members will receive a new bag of oyster spat to grow until the process repeats in 2002. Team members are hopeful this process will continue for many years until a healthy, sustainable oyster bar is established in Herring Bay.

Annapolis High School

Due to the success of the Bates Middle School grow-out station, the Team will work with Annapolis High School to implement several innovative reforestation and habitat restoration projects. Several Bates Middle School students will be attending Annapolis High School in the fall of 2001. The Team is looking forward to working with these same students on future projects.

The first phase includes the establishment of a tree grow-out station on the school grounds. At the same time, students will use trees from the Bates grow-out station to plant along their nature path. Students will help create a pond eco-system in the school's courtyard. Plans are being developed to BayScape areas surrounding the athletic fields, create an outdoor classroom for science classes, and ultimately reconstruct a wetland. All of these components will be incorporated into the students' curriculum.

Energy Efficiency & Green Power

After their success in instigating the Executive Order on Green Power and Energy Efficiency, Team members are not going to stop now. The Team has already identified potential projects and approaches to address the major environmental threat of nitrogen air deposition. First, the proposed executive order states that a committee will be formed to develop Green Building criteria. Team members will actively participate in these discussions. Beyond the executive order, the Team also wishes to continue working with its watershed's counties to promote Green Building techniques in county-owned offices and facilities. Lastly, as specified in the Chesapeake 2000 Agreement, the Team will actively monitor the goals associated with the state purchasing energy efficient automobiles in an effort to update its fleets and minimize airborne pollution.

Rhode & West River Watersheds

With the past successes of developing the South River Federation, the Herring Bay CWI, and the Friends of Annapolis' Creeks, the Team plans to continue establishing local watershed organizations. Members plan to work with activists within the Rhode and West River watersheds to identify and implement a variety of restoration projects. Team members have met with residents and plan to support opportunities within this watershed to increase the overall health of these river ecosystems.

Middle Potomac

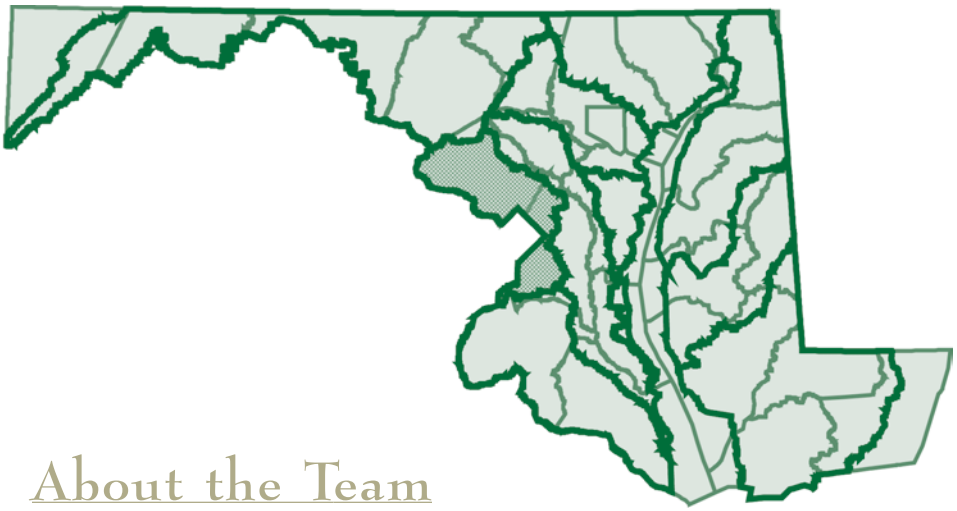
Watershed Heroes

Ted Graham

Ted has championed the Maryland and District of Columbia environment for the past 28 years through his work for area consulting firms, local governments, and currently the Metropolitan Washington Council of Governments. Ted is a policy watcher extraordinaire and has effectively kept area local governments abreast of emerging Chesapeake Bay Program and Team issues. His leadership has led to constructive discussions on smart growth, green buildings, sustainable development, forest conservation, and other topics where local government understanding and support is critical to success. Ted reflects that the opportunity to share the ideas and concerns of the Teams directly with the Governor's Bay Cabinet is an invaluable aspect of the Tributary Strategy process.

Wilton Corkern

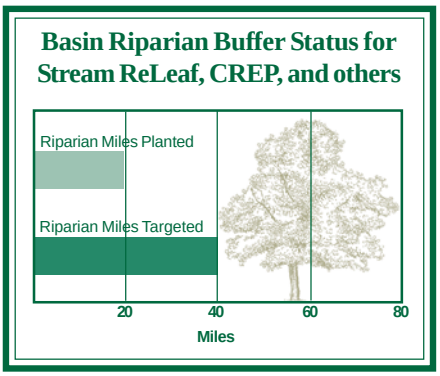
Wilton is the president of the Accokeek Foundation, chairman of the Board of Directors of Friends of the Potomac, and vice-chairman of the Potomac River Basin Consortium. For the past 10 years, Wilton has been working to protect the Potomac River watershed with a historian's perspective that emphasizes the preservation of the cultural and natural resources of the Potomac River. Through his work with the Accokeek Foundation, he has introduced the Potomac River's history to hundreds of thousands of Piscataway Park visitors, helped further sustainable and organic agriculture efforts, and restored 6 acres of riparian forest buffer. Wilton also helped found the Potomac River Heritage Project, which was instrumental in designating the Potomac as an "American Heritage River."



About the Team

The Middle Potomac watershed contains a unique set of complexities. It is part of the multi-jurisdictional Potomac watershed, which includes portions of Maryland, Virginia, the District of Columbia, Pennsylvania, and West Virginia. The watershed is composed of a wide array of land uses, including extensive urban and suburban areas and vast productive agricultural lands. These areas are rapidly changing and facing increasing growth pressures from the Washington D.C. metropolitan area. The issues of this watershed vary greatly too – from jurisdictions sharing combined sewer overflows and urban areas with extensive stormwater flows to farms dealing with nutrient runoff and agricultural concerns.

The Middle Potomac Team is looking forward to the challenges posed by the Chesapeake 2000 Agreement. The Team spent much of 2000 educating its members on the new agreement to help shape the Team's programs and policies and prepare to implement the agreement's initiatives in the Middle Potomac watershed. Team members also developed a comprehensive public outreach and education program in 2000 that they will put into action in 2001. These and other initiatives are explained in greater detail in the Accomplishments sections of this report.



Accomplishments

Preparing to Implement the New Bay Agreement

Much of the Middle Potomac Team's efforts in 2000 were focused on preparing to implement the Chesapeake 2000 Agreement initiatives. The Team invited a number of speakers to address timely topics at Team meetings. Most recently, Tom Simpson, co-chair of the Nutrient Cap Strategy Workgroup, gave a presentation about Maryland's Interim Nutrient Cap Strategy, and Allison Wiedeman of the Chesapeake Bay Program Office gave a presentation on the conclusions of the Chesapeake Bay Program's nutrient trading initiative. Ted Graham, Team chair, spoke with Governor Glendening

about the sensitive issue of integrating voluntary Chesapeake Bay Program processes with regulatory requirements. He followed this discussion up by writing a comprehensive letter to Maryland Department of Environment Secretary Jane Nishida on behalf of all the Tributary Teams. He also gave a presentation to the Bay Cabinet on Tributary Team expectations and responsibilities regarding the new Tributary Strategies. Each of these initiatives is directly linked to the Chesapeake 2000 Agreement.

Meeting with Doug Duncan, Montgomery County Executive

In 2000, Chair Ted Graham, Cameron Wiegand, and Susan Straus met with Montgomery County Executive Doug Duncan and state agency representatives to brief them on the Team's activities and issues of concern. They also discussed the drought issue, the impact of the Chesapeake 2000 Agreement, the Local Government Partnership Agreement, stormwater concerns, and funding issues.

Team Briefings

The Team spent significant time receiving briefings on issues relating to their watershed. Presentations in 2000 included the following:

Bonnie Bick, from the Campaign to Reinvest Oxon Hill, presented her perspectives on the Wilson Bridge work. She explained how, in her opinion, the new construction should include a passage for bikes and public transport (rail) rather than just motor vehicle traffic.

Robert Boone, founder and president of the Anacostia Watershed Society, presented a description of the Potomac watershed's best-known river – the Anacostia. His presentation included descriptions and the challenges associated with the watershed's many parking lots, the river's combined sewer overflows, and sediment banks.

Chesapeake Campaign Coordinator Ruth Goldstein, from Community Media, explained her work to encourage Conservation Reserve Enhancement Program implementation. She also discussed several aspects of the program, including corporate sponsors, farmer profiles, and video news releases.

Public Outreach and Education

During 2000, the Middle Potomac Team worked to strengthen partnerships with other organizations, such as the Anacostia Watershed Society. The Team conducted a number of activities to educate Team members, interested participants, and partners about the watershed, including a canoe trip on the Anacostia River, the New and Alternative Agriculture Practices Farm Tour, and the Secchi Dip-In 2000.

Canoe Trip on the Anacostia River

On July 5, 2000, the Middle Potomac Tributary Team partnered with the Anacostia Watershed Society to conduct a 3 hour canoe trip down the Anacostia River. Members from both groups met at Colmar Manor in Bladensburg, Maryland – the site of the newly renovated Bladensburg Waterfront. The Anacostia Watershed Society provided all of the necessary

Team Membership

Team Members

Edward "Ted" Graham, Chair, Washington COG
Gary Felton, Vice Chair, University of Maryland
Steve Bieber, Maryland Dept. of the Environment
Nazir Baig, Maryland NCPPC, Montgomery Co.
David Bailey, Potomac Electric Power Company
Ginny Barnes, Sierra Club
Collin Burrell, Dept. of Health/Env. Admin., D. C.
Dan Carstea, Maryland NCPPC, Pr. George's Co.
Mow-Soung Cheng, Prince George's County
Wilt Corkern, Accokeek Foundation
Jeremy Criss, Dept. of Economic Development
Neal Fitzpartick, Audubon Naturalist Society
Carlton Haywood, ICPRB
Cy Jones, Wash. Suburban Sanitary Commission
David Lake, Mont. Co. Dept. of Enviro. Protection
George Lechlider, Maryland Farm Bureau
Sara Loechel Timlin, Citizen
Ed Merrifield, Citizen of Derwood
Matt Mulder, Accokeek Foundation
Mark Pfefferle, City of Gaithersburg
Julia Phifer, Citizen
Marshall Rea, Montgomery Co. Soil Cons. District
Gary Smith, MACTEC, Inc
Susan Strauss, City of Rockville
Cameron Wiegand, Montgomery Co. Dept. of Environmental Protection

Participants

Richard Alper, Citizen
Leola Abraham, Citizen
Robert Boone, Anacostia Watershed Society
Bill Bowen, Citizen
Sandra Burk, Potomac Conservancy
Meo Curtis, Mont. Co. Dept. of Enviro. Protection
Cynthia Hannibal, Citizen
Stephan Hannibal-Lockley, Citizen
Ron LaCoss, Citizen
Daniel Nees, University of Maryland, Environmental Finance Center
David Plummer, MD DNR Forestry
Tina Schneider, Maryland NCPPC, Parks
Dr. Linda Silversmith, Citizen
Bill Spicer, Naval Surface Warfare Center

Team Coordinator

Claudia Donegan

equipment, including canoes and tour guides, for the late afternoon excursion. As the group paddled toward the District of Columbia, the participants saw a variety of wildlife, including blue heron, osprey, and river otter. The guides also showed the group a wetland restoration project that is being developed along the river.

New and Alternative Agriculture Practices Farm Tour

The Middle Potomac Agricultural Initiatives Workgroup conducted the New and Alternative Agricultural Practices Farm Tour on October 11, 2000. The goal of the tour was to further the education and understanding of citizens, farmers, and elected officials about the pressures farmers are facing in this rapidly urbanizing region. More than 40 guests, three newspaper reporters, and the Associated Press attended the event. Tributary Team staff also gave a live radio interview on WNAV about the event and the associated issues.

The tour highlighted four new and alternative agricultural operations within Anne Arundel and Prince George's Counties. The tour began at Locust Farm in Anne Arundel County. This farm is being converted from a cash grain rented operation to a grain and hay family operation to support beef cattle and horses. Various practices were featured that reduce nutrient and sediment losses from fields and backyards and enhance wildlife habitat.

The next three stops of the farm tour were in Princes George's County. An agroforestry operation, known as ERCO, Inc., is reclaiming an old sand and gravel operation using hybrid poplars. The operation utilizes sludge as the nutrient source for tree growth.

The Accokeek Foundation hosted a luncheon along the banks of the Potomac River across from Mount Vernon and provided a tour of their Robert Ware Strauss Ecosystem Farm. This organic farm produces high value crops through Community Supported Agriculture (CSA). Through an annual fee, participants purchase a weekly share of the harvest that they pick up once a week during the harvest season.

Anne Arundel County Soil Conservation District Manager Joseph Haamid talks to farmers during the Team's New and Alternative Agricultural Practices Farm Tour.

The last stop on the tour was Cherry Hill Farm. Here, a farmer's market blends agriculture and entertainment, termed "agrotainment" (hayrides through fields of costumed scarecrows and haunted barn tours), while offering farm fresh fruits and vegetables.

Secchi Dip-In 2000

The Middle Potomac Team partnered with the Anacostia Watershed Society to hold the Anacostia Secchi Dip-In 2000 in conjunction with the Sojourn to the Bay. The dip-in was held on June 5, Bernie Fowler Day, at the Anacostia Park.

Retired State Senator Bernie Fowler initiated wade-ins 13 years ago when he invited people to wade into the Patuxent River to see how far they could go before losing site of their feet. This technique is a unique way to measure water clarity while educating and involving the public in their watershed. Due to the urban nature of the Anacostia site, however, participants lower Secchi disks into the water to measure water clarity versus wading into the water.

Carl Cole, a local watershed hero, and students from a local school were among the dip-in participants. The group lowered a number of Secchi discs from the pier into the Anacostia River to measure water clarity. The Team intends to make this an annual public outreach event to raise the awareness of citizens living in the watershed about their water quality and watershed issues.

The dip-in was held in conjunction with the "Sojourn to the Bay," which is sponsored by the Anacostia Watershed Society every year. For the 2000 Sojourn, more than 15 brave souls kayaked from the headwaters of the Anacostia to the mouth of the Potomac River. Dip-in participants escorted the kayakers for the first ½ mile of the sojourn. Washington D.C. fireboats provided a festive and grand send-off by shooting fountains of water several hundred feet into the air as the kayakers made their way down the river.

During the Anacostia Secchi Dip-In 2000, Middle Potomac Team members take a closer look at aquatic life in the river.

2001 Priorities

New Goals and Strategies

Meeting the Chesapeake 2000 Agreement water quality goals will be difficult throughout the Chesapeake Bay watershed. Because of its many jurisdictions and development pressures, achieving Chesapeake Bay goals in the Middle Potomac watershed will be especially challenging.

Priority areas for the Team with regard to the new agreement include Watersheds; Wetlands; Forests; Land Conservation; and Development, Redevelopment, and Revitalization. The Team also plans to ensure that a number of key policy topics are addressed in the development of the new Tributary Strategies. These topics include designated uses for the tidal Potomac and water quality criteria, establishing nutrient and sediment load limits, (re)calibrating and applying the Chesapeake Bay Program's Watershed Model, determining load allocations among the different jurisdictions and sectors, assessing the role of regulatory National Pollutant Discharge Elimination Permits in a voluntary Chesapeake Bay Program setting, using monitoring to measure progress, and assisting the Chesapeake Bay Program with the public participation process.

Stormwater Management

Managing the urban landscape and urban stormwater are priorities for the Middle Potomac Team. Team members have already begun to implement related Chesapeake 2000 initiatives. One example is the Team's implementation of the commitment to "identify and remove state and local impediments to low impact development designs." In the fall of 2000, Team Chair Ted Graham coordinated low impact development workshops at the Washington Council of Governments that addressed stormwater management. Team members from Montgomery and Prince George's Counties participated in the workshops.

Agricultural Issues in the Middle Potomac Region

Following on the heels of the successful 2000 farm tour, the Agricultural Initiatives Work-group is considering a follow-up tour that would visit Montgomery County. The group also plans to discuss the feasibility of developing an environmental enhancement payment for participants of the Conservation Reserve Enhancement Program.

Quantifying Pollution from Urban Areas

The urban contribution of nutrient pollution to the Chesapeake Bay is the least understood component of nutrient loadings. It is necessary to learn more than what the Chesapeake Bay Watershed Model depicts in terms of the sources of nutrients in the urban environment so that the Tributary Teams can appropriately target load reductions.

Public Outreach and Education

Finally, much of the Chesapeake 2000 Agreement is about "Education and Outreach." Recognizing its responsibilities in this area, the Middle Potomac Team has convened a Public Outreach and Education Committee that will play a prominent role in 2001. Their agenda includes preparing for the annual Secchi dip-in, planning a trip to look at land preservation through land trusts, developing partnerships with other organizations (such as the Potomac Conservancy), preparing at least one 2001 habitat restoration grant application, and providing public outreach advice for the new Tributary Strategies.

Eric Flamingo of ERCO Inc., discusses agro-forestry operations with participants on the New and Alternative Agricultural Practices Farm Tour.

Patapsco/Back Rivers

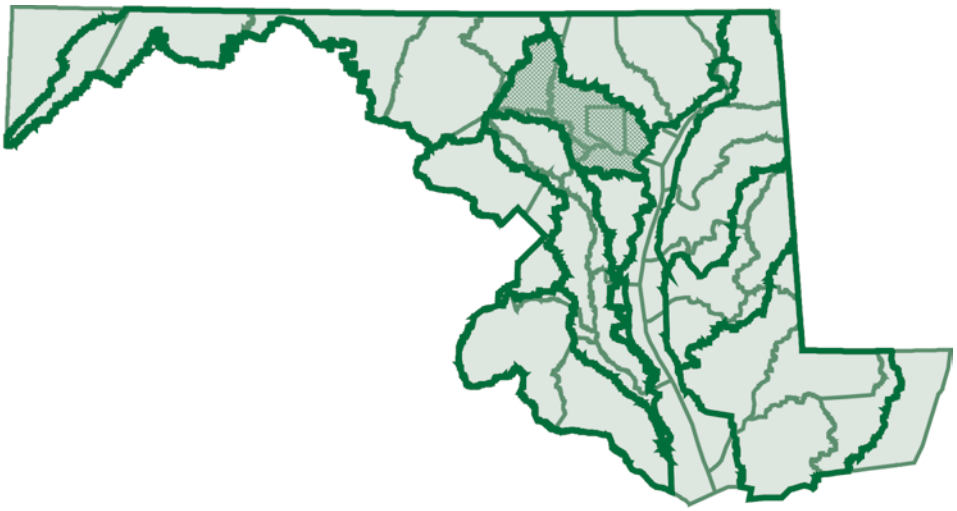
Watershed Heroes

John Martin

This is the 2nd Watershed Hero Award for John. This year, he receives the award in recognition of his leadership in developing a partnership with Baltimore City and the Back River wastewater treatment plant to establish a tree grow-out station at the plant. The tree grow-out station was established in 1999. In 2000, Team members potted approximately 500 trees, nurtured them to transplant size, and distributed them to non-profit organizations for reforestation projects. Recently, John was instrumental in obtaining habitat restoration grant funding to expand the grow-out station in 2001. John was also influential in adding several monitoring stations to the Team's 2000 Secchi Dip-In event. John participates regularly on the Cross-Team Point Source Workgroup, helps the Team understand wastewater treatment plant operations, and contributed to the Team's comments on the draft Chesapeake 2000 Agreement.

Ellsworth Acker

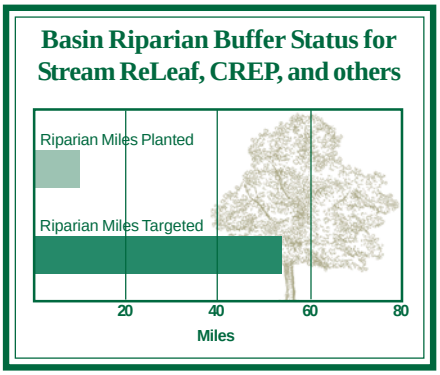
Ellsworth receives this award for his volunteer service to the Piney Run Reservoir, for helping the Team understand the reservoir's conditions and trends, and for his help with the Secchi dip-in. After retiring from W.R. Grace as a chemist, Ellsworth pursued a degree in biology. Since 1986, he has volunteered his time and considerable skills for the benefit of Piney Run. In consultation with the Piney Run Nature Center, Carroll County, consultants, and DNR, Ellsworth planned and implemented a comprehensive monitoring system for the reservoir. He takes biological and chemical samples and measurements and interprets the results, often using his home laboratory. Nature Center staff use his work to conduct interpretive programs, while Carroll County and DNR use his information for lake and watershed management. The Team's May meeting was held at the Nature Center where Ellsworth provided an informative talk about the watershed and a boat ride.



About the Team

In 2000, the Patapsco/Back River Tributary Team made significant progress in reducing nutrient loads and improving resource management in the watershed. The Team meets one evening a month and has an open door policy. All interested persons and organizations are welcomed and encouraged to come and participate. Team workgroups include Outreach and Education, Forest and Resource Management, Point Source, Developed Lands, and Agriculture.

The Patapsco-Back River basin includes all of Baltimore City and portions of the five suburban counties that fall within the watershed. Herring Run, Jones Falls, and Gwynns Falls watersheds are all located within the basin. Its membership includes staff from Baltimore City and surrounding county water quality and environmental offices as well as members from the Alliance for the Chesapeake Bay, Save Our Streams, watershed associations, local businesses, and agricultural organizations.



Accomplishments

Outreach & Education Workgroup

During 2000, the Patapsco/Back Team educated itself and others about issues affecting the watershed and the Chesapeake Bay. Several Team members participated in the 4th Annual Tributary Team Meeting where they learned about other Tributary Team activities and upcoming Chesapeake Bay initiatives. In addition, the Team received briefings and discussed the implications of recent report findings, such as *From the Mountains to the Sea – The State of Maryland's Freshwater Streams*, the draft Interim Nutrient Cap Strategy, and *Water and Habitat Quality in Baltimore Harbor and Back River*. The Team collaborated with the Upper Western Shore Team, the Maryland Department of Natural Resources (DNR), and other state agencies to sponsor a public meeting that gave area citizens an opportunity to review and comment on the draft Chesapeake 2000 Agreement.

The Team focused on increasing its membership, diversity, and outreach and sought to strengthen its partnerships with other organizations that have a stake in the Patapsco/Back River watershed (e.g., watershed and community associations, the National Aquarium in Baltimore, The Living Classroom Foundation, the Maryland Science Center, Blacks of the Chesapeake Foundation, Piney Run Nature Center, Sojourner Douglass College, and marina operators). In cooperation with these organizations, the Team held meetings at the Piney Run Nature Center, aboard The Living Classroom's schooner *Lady Maryland*, and at the National Aquarium to learn about the important contributions of these organizations and strengthen the Team's relationship with them.

On June 11, the Patapsco/Back Team partnered with 24 other organizations with an interest in water quality to hold "Secchi Dip-In 2000." For the event, participants took Secchi depth measurements in the Baltimore Harbor, Patapsco and Back Rivers, and reservoirs in the watershed. During the dip-in, the Team staffed an interpretation center in a tent on the grounds of the Maryland Science Center along the Inner Harbor promenade. Team members displayed exhibits and offered information about the Tributary Strategies Program and the participating organizations. Vince Leggett, Team coordinator and local author, gave a presentation on the "Blacks of the Chesapeake." Bill Stack, Team member, presented an analysis and interpretation of the Secchi depth measurements that were reported by the participating organizations during the day.

The Team wrote letters of support on behalf of the National Aquarium in Baltimore for its FY 2001 project proposal to the Chesapeake Bay Environmental Monitoring for Public Access and Community Tracking Program. If approved, this project will improve public access to Chesapeake Bay water quality and watershed information. The Team also supported the "Celebrating Diversity Along the Chesapeake Bay" exhibit at the Enoch Pratt Central Library. The Blacks of the Chesapeake Foundation designed this display, which included a large map of the Patapsco/Back River watershed. Team members participated in the Cross-Team Public Outreach Workgroup to develop the 2nd *Baltimore Sun* insert, "Picture Maryland – Where Do We Grow from Here?" This public information piece focuses on Smart Growth and will be distributed on Earth Day 2001.

Forest and Resource Management Workgroup

In partnership with the Back River wastewater treatment plant, the Team established a tree grow-out station on the plant's grounds. This year, more than 500 tree seedlings were obtained from DNR, potted, nurtured to transplant size, and provided to watershed organizations whose members replanted them as part of a stream buffer or environmental enhancement project. The Team was awarded a habitat restoration grant in 2001 to maintain and expand the grow-out station.

Team Membership

Team Members

Jack Anderson, Chair, Baltimore Metro. Council
Guy Hager, Vice-Chair, Parks and People Found.
Steve Bieber, Maryland Dept. of the Environment
Jackie Carrera, Parks and People Foundation
Peter Conrad, Baltimore City Planning Department
Fran Flanigan, Alliance for the Chesapeake Bay
Elinor Gawel, A. A. Co. Planning & Code Enforc.
Donald Helm, Morgan State University
Rick Hersey, Herring Run Watershed Association
Keith Lackie, Howard Co. Dept. of Planning
Stuart Leister, Carroll County SCD
John Martin, Baltimore City Dept. of Public Works
Ed Null, Carroll County Soil Conservation District
Don Outen, Baltimore County DEP
Eugene Reynolds, Agricultural Products GP
Jim Slater, Carroll Co. Department of Public Works
Bill Stack, Baltimore City Dept. of Public Works
Barbara Taylor-Suit, Save Our Streams
Lee Walker-Oxenham, Citizen
Raj Williams, Williams Associates
Robert Zieham, Howard County SCD

Participants

Robert Garner, Friends of Patapsco Valley & Heritage Greenway
George Harman, Citizen
Christina Rockel Houchens, Living Classroom Found.
Angie Lawrence, National Aquarium in Baltimore
Rob Northrop, MD Dept. of Natural Resources
Catherine Rappe, MD Dept. of Natural Resources
Jessica Ritter, Howard County Dept. of Planning
Sue Rothergill, Maryland Save Our Streams

Team Coordinator

Vince O. Leggett

The Patapsco/Back Team championed The Living Classroom Foundation's habitat restoration grant proposal, "Patapsco River: Working for Wetlands." The Team plans to help the Foundation restore two wetland areas in the Baltimore Harbor as part of a vital, hands-on educational program for area youths.

Construction is underway in Baltimore to recycle, update, and convert an old Montgomery Ward's warehouse into a green building. Once completed, this building will be the new home of the Maryland Department of the Environment and other tenants and a model of how existing structures can be renovated with energy and water saving devices. Patapsco/Back Team members supported the proposed green roof for this building through the state's Section 319

grant program. When completed, the building's roof will be covered with vegetation that will reduce stormwater flow and provide employees with a unique respite.

The Patapsco/Back Team partnered with the Upper Western Shore Team to advocate a Clean Water Action Plan proposal that focuses on watershed restoration for reservoirs in the Gunpowder and Patapsco watershed. Team members look forward to working with DNR and other partners to assess forest resources in the Liberty Reservoir watershed and to identify high priority areas for planting riparian forest buffers.

Team members and staff join volunteers to create a tree grow-out station. Potted seedlings will be nurtured through the summer and planted at various sites in the fall.

Point Source Workgroup

During 2000, Patapsco/Back Team members participated on the Cross-Team Point Source Workgroup. In October, the Team was briefed on the status of nutrient reduction at the Back River and Patapsco wastewater treatment plants. Team members discussed the need for further nutrient reductions as determined by recent Chesapeake Bay Program modeling efforts. Following the briefing, the Team wrote a letter to Baltimore City that supported efforts to install state-of-the-art nutrient removal at the Patapsco wastewater treatment plant and offered the Team's support in securing state and federal funding assistance. The Team and stakeholders held a follow-up meeting that established a basis for cooperative action in 2001.

Developed Lands Workgroup

The Patapsco/Back River watershed has the largest amount of developed land among all of Maryland's tributary basins. As a result, the Patapsco/Back Team continued to devote considerable effort to nutrient reduction and other water quality improvement issues related to urban and suburban development.

The Baltimore Metropolitan Council, the Patapsco/Back River and Upper Western Shore Teams, and the Center for Watershed Protection collaborated on a proposal that would result in a more accurate assessment of best management practice performances in stormwater management facilities in the Baltimore metropolitan area. The Center for Watershed Protection completed the first phase of the effort by developing a methodology to statistically validate and assess best management practice performance in the Baltimore metropolitan area and elsewhere in the state. Records for 8,519 facilities employing best management practices were located. The data that are available for most of these facilities, however, do not permit definitive conclusions about their performance. Local management authorities need to fill the data gaps prior to the next phase of work. To facilitate this work, the Baltimore Metropolitan Council has proposed that the $10,000 set aside by DNR for the Council's stormwater management assessment should be used to assist local authorities in filling the data gaps in the Patapsco/Back River Tributary watershed.

Trib Team Quick Fact

Harriet Tubman used the Orchard Street Church in Baltimore as a station for the Underground Railroad, and Frederick Douglass worked as a slave in a Fells Point shipyard, caulking ships to make them watertight.

The Patapsco/Back Team continued to work with local governments, the Baltimore Metropolitan Council, and state agencies to identify funding sources for local watershed and stormwater management programs. The list of mandated requirements imposed on local governments by state and federal governments has grown dramatically over the last 20 years and continues to be a concern of the Tributary Teams and a problem for the local governments.

Representatives from the Patapsco/Back, Upper Western Shore, and Middle Potomac Teams continued to work together to address the issue of inadequate funding for urban programs. The Teams believe that the state should substantially increase the grant funding available to the local governments. Without such an increase, local governments will have a difficult time implementing Bay goals, Total Maximum Daily Loads, and the National Pollutant Discharge Elimination System's

municipal stormwater permit requirements. Through briefings, Team members have expressed these concerns to the Bay Cabinet, legislators, and other interested groups.

Team members participate on the Maryland's Tracking Committee and Maryland's Nutrient Cap Strategy Workgroup. Here, they try to resolve issues related to the effectiveness of best management practices and tracking incongruities, especially for urban areas. They also try to develop new methods to more accurately track best management practice implementation. In cooperation with the Maryland Water Quality Monitoring Council, Team members provided the Chesapeake Bay Program Modeling Subcommittee with more accurate, up-to-date monitoring data for urban areas that will improve the accuracy of the Bay modeling effort.

Agriculture Workgroup

The Team supported two important Rural Legacy proposals for the watershed – the South Branch Patapsco Rural Legacy Area, submitted by Howard County and partners, and the Coastal Rural Legacy Area, submitted by Baltimore County and partners.

2001 Priorities

Watershed & Stormwater Funding

Inadequate funding for watershed and stormwater management at the local level is the biggest challenge standing in the way of improved water quality and resource management in the Patapsco/Back River watershed. A new partnership is needed between the state and local governments to adequately fund watershed and stormwater management programs. The Patapsco/Back Team will continue to work with state agencies, the Baltimore Metropolitan Council's Environmental Finance Alternatives Committee, and others to pursue adequate funding for watershed and stormwater management. The Team's goal for this effort is to strive for increased grant funding for a variety of local resource management programs.

Communication, Coordination, Partnerships, and Outreach

The Patapsco/Back Team plans to take the lead in facilitating the 3rd Annual Secchi Dip-In. The Team also plans to strengthen its linkages with other watershed groups throughout the basin and with organizations that conduct environmental programs in and around Baltimore Harbor, such as The Living Classroom Foundation, the National Aquarium in Baltimore, the Maryland Science Center, the Chesapeake Bay Foundation, and the Southside Academy of Environmental Science.

During 2001, the Team will continue to foster partnerships with its watershed stakeholders and will develop innovative approaches to publicize their roles and accomplishments. The Team will place special emphasis on developing positive relationships with area colleges, universities, community colleges, and public and private schools to implement environmental education initiatives.

The Team's minority outreach efforts, such as those developed in partnership with the Blacks of the Chesapeake Foundation, are a new and vital component of the Team's approach to minority involvement. The Team is committed to supporting diversity engendering strategies.

Chesapeake 2000 Agreement

The Team intends to support the implementation of the Chesapeake 2000 Agreement commitments. In particular, the Team will help develop the new Tributary Strategies. The Team will also review and provide comment to the draft Interim Nutrient Cap Strategy.

Smart Growth

The Patapsco/Back Team will continue to examine Smart Growth, Rural Legacy, and the education programs that address these initiatives. The Team will integrate these initiatives into the new Tributary Strategies.

Green Buildings

Team members will work with various housing agencies in the watershed to help integrate Maryland's Green Building Program into urban redevelopment projects. Team members will also help market the Green Schools concept to schools in the watershed.

Team members and volunteers show watershed residents how to "dip-in" to the Baltimore Harbor and measure its environmental health.

Patuxent River

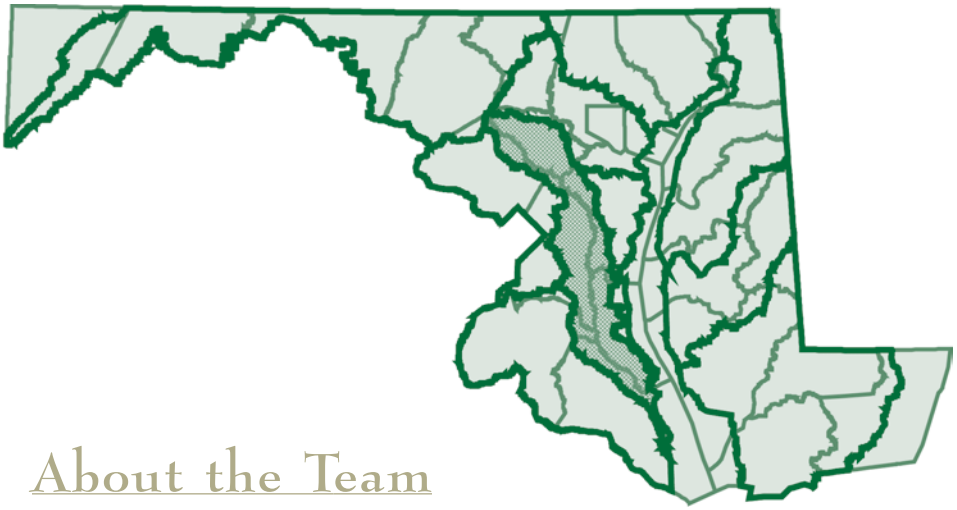
Watershed Heroes

Lori Shirley

As a planner for the City of Bowie for 14 years, Lori's work has concentrated on environmental planning issues and forest conservation. Through her job, Lori has contributed to the development of the Maryland Forest Conservation Act, the Prince George's County Woodland Preservation and Tree Conservation Ordinance, and the county's Landscape Manual. Educating her community on environmental issues is a priority for Lori. Presently, her work with the Commission is focused on education and outreach to area residents. As a local government contact for the Commission since 1988, Lori has seen a lot of positive changes since the inception of the Tributary Strategy Program. Reflecting on her involvement with the group, Lori stated that she appreciates the communication and dialog among the different jurisdictions. She believes that the Commission has made significant contributions toward protecting the Patuxent River and that communication is the best way for the Team to attain the goals of the Chesapeake Bay agreements.

Susan Overstreet

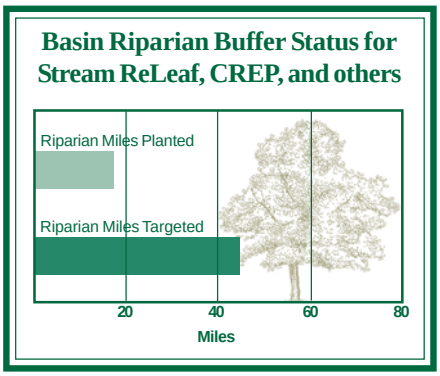
Susan works as the environmental planner for Howard County and has participated on the Patuxent River Commission for 7 years. Susan was one of the prime movers in drafting the Patuxent Policy Plan Addendum. She also provides support for the county's Patuxent Reservoirs Watershed Technical Advisory Committee, which has taken action to improve water quality in the streams and reservoirs. As a member of the Team's Public Outreach Workgroup, Susan feels that the challenge is to be creative in developing a message that speaks to a broad range of people's immediate interests. Susan said that what she has liked most about her involvement with the Commission is her work with the other members. "These people really care about the environment, and they will go out of their way to do something extra to get the job done."



About the Team

The Patuxent River Commission is a 34-member body that was created by state legislation in 1980 and serves as the Patuxent River Tributary Team. The Commission's members represent a cross-section of the watershed's interest groups and serve as an inter-jurisdictional forum to address Patuxent River issues and to implement the Patuxent River Policy Plan. Further, the Commission addresses a variety of policy issues that affect the watershed, including Smart Growth, the Clean Water Action Plan, stormwater management, Total Maximum Daily Loads, on-site wastewater treatment, and agricultural nutrient management.

The Patuxent River watershed spans seven counties. Its headwaters, in Montgomery and Howard Counties, feed the reservoirs of the upper Patuxent and enter the Chesapeake Bay at Solomons Island. In 2000, the Commission met in locations throughout the watershed, including the Prince George's County Department of Environmental Resources, Merkle Wildlife Sanctuary, Belair Mansion, Billingsley Manor, Hollywood Elementary School (St. Mary's County), Savage Mill Manor House, and Benedict Fire House.



During 2000, the Commission worked on several initiatives as a collective body but also established the Riparian Buffer Planting Workgroup, the Patuxent Paddling Path Workgroup, and the Public Outreach and Education Workgroup to focus on specific projects. The Riparian Buffer Planting Workgroup is developing an annual model volunteer program to plant buffers along rivers and streams. The Paddling Path Workgroup is finalizing a web-based interactive map that gives information on launch sites and paddling destinations as well as nearby recreational, cultural, and historical points of interests. The Public Outreach Workgroup created the "Making a Watershed Difference" display to educate citizens about stewardship activities. The workgroup is exhibiting the display at public events throughout the watershed and plans to show the display annually in each county.

Accomplishments

Chalk Point Oil Spill

On April 7, a crack in a 12 inch pipeline released more than 140,000 gallons of oil into Swanson Creek, a tributary to the Patuxent River. The Commission has been following this situation closely and has secured representation on the Governor's Citizen Advisory Committee and the Governor's Pipeline Safety Technical Committee. The Commission is being briefed regularly by the Natural Resource Damage Assessment Trustees on actions and findings of the assessment process. The Commission has taken a long-term perspective and is working to ensure that the data collections, monitoring, reporting, and resulting decisions are in the best interests of the Patuxent River and its resources.

Policy Recommendations

Throughout 2000, the Commission commented and presented recommendations on several key policies and issues affecting the Patuxent River and the Chesapeake Bay, including the drafts of the Chesapeake 2000 Agreement and Maryland's Chesapeake Bay Partnership Agreement, Rural Legacy applications, Smart Codes, septic systems, and the Unity water monitoring station closing. After the Swanson Creek oil pipeline leak in April 2000, the Commission provided an organized framework for stakeholder input and will continue to be involved in oil pipeline safety issues.

Riparian Buffer Planting Workgroup

The Riparian Buffer Planting Workgroup coordinated two tree plantings along Midway Branch in Fort Meade. The workgroup partnered with Fort Meade, Anne Arundel County's forester, the Maryland Department of Natural Resources (DNR), the Washington Suburban Sanitary Commission, and children from an after school youth services program and McArthur Middle School to coordinate the project and plant the trees.

Environmental Outreach and Education Workgroup

The Public Outreach and Education Workgroup distributed the Patuxent Public Outreach Database to respondents throughout the watershed and requested updates. The Commission also finished collecting information on monitoring activities throughout the Patuxent watershed and posted an interactive map displaying metadata for monitoring activities. This information can be used to help locate water quality data.

Patuxent River Policy Plan

During 2000, the Commission was successful in getting all seven counties in the Patuxent watershed and the City of Laurel to adopt the 1997 Addendum to the 1984 Patuxent River Policy Plan. The Patuxent River Policy Plan is a joint state and local government land management plan that gives policy guidance on issues impacting the Patuxent River and its watershed.

The 1984 Policy Plan was established by resource management agencies and elected and appointed officials who met, discussed, and agreed to 20 goals that became the basis for the Patuxent River Policy Plan. The goals provided a broad

Team Membership

Team Members

Mary Lorsung, Chair, Howard County Council
Marc Lieber, Vice-Chair, Proficient Technologies
Mary Abrams, MD Department of Planning
Charles Adams, MD State Highway Administration
Nazir Baig, Nat'l Capital Park & Planning Comm.
David Bourdon, Prince George's Co. SCD
Mark Bundy, MD Dept. of Natural Resources
Hamer Campbell, Suburban Bldg. Industry Assoc.
Larry Cartano, Business
Wesley Coleman, US Army Corps of Engineers
Meosotis Curtis, Mont. Co. Dept. of Env. Protect.
Marland Deen, Charles County Commissioner
Ginger Ellis, Vice-Chair, Anne Arundel Co. OPZ
Bernie Fowler, Citizen
Shelby Guazzo, St. Mary's County Commissioner
Eileen Setzler-Hamilton, Chesapeake Bio. Lab.
William Harmeyer, US Army, Fort Meade
Elizabeth Hickey, UMD, Environ. Finance Cntr.
Kenneth Keen, Waterman
Mary Kilbourne, Citizen
Pamela King, Cooperative Extension Service
Jack Leighty, Citizen
Dominic Motta, Pr. George's Co. Natural Res. Div.
Royden Powell, III, MD Dept. of Agriculture
Jodye Russell, Wash. Suburban Sanitary Comm.
Mark Kendal Smith, University of Maryland
Alexander Stewart, St. Mary's Co. SCD
Bob Summers, MD Dept. of the Environment
David Vaughn, Laurel Dept. of Plan. and Zoning
Beverly Warfield, Pr. George's Co. DER

Participants

Steve Bieber, MD Department of the Environment
David Brownlee, Calvert Co. Dept. of Plan. & Zoning
Robert Jarboe, MD Department of Agriculture
Leroy Jonas, MD State Highway Administration
Karen Kilfeather, Calvert Co. SCD
Paula McLelland, Business
Susan Overstreet, Howard Co. Dept. of Plan. & Zoning
Lori Shirley, Bowie Dept. of Plan. and Econ. Dvlpt.
Lorelei J. Summerville, Citizen
Sue Veith, St. Mary's Co. Dept. of Plan. and Zoning
Karen Wiggin, Charles Co. Dept. of PGM

Team Coordinators

Claudia Donegan
Rich Hall, MD Department of Planning
Ken Hranicky, MD Department of Planning

1984 Patuxent Policy Plan Recommendations

1. Establish a Primary Management Area along the river and its tributaries;
2. Develop programs for providing best management practices and vegetative buffers immediately adjacent to the river and its tributaries;
3. Survey and identify major non-point pollution sites;
4. Develop state cost-share programs to aid local governments in retrofitting existing development;
5. Accommodate future development to minimize water quality impacts and maximize existing development opportunities;
6. Increase recreation and open space through public purchase and retention of federal holdings;
7. Protect existing forest cover and reforesting areas important for water quality protection;
8. Preserve prime and productive agricultural land;
9. Manage sand and gravel extraction to avoid damage to the river; and,
10. Adopt an Annual Action Program to implement the strategies.

vision to restore and maintain water quality, habitat, groundwater and surface water supplies, and a high quality of life along the Patuxent River and its tributaries. The 1984 Policy Plan also included 10 recommendations to control nonpoint source pollution and to protect the river. These recommendations are just as important today as when they were first proposed and supported 13 years ago.

The 1997 Addendum updates the original 1984 Policy Plan. This update will be presented to the 2001 Maryland General Assembly for adoption by joint resolution of the State Senate and the House of Delegates. The Addendum upholds the recommendations set forth in the original Policy Plan and enables the Commission to meet the three continuing challenges facing the watershed – growth management, personal stewardship, and financing. The 1997 Addendum outlines how the Commission should address these challenges include the following:

I. Implement a comprehensive watershed management approach to control all sources of pollution and resource degradation.
II. Continue to restore, improve, and protect the habitat function of aquatic and terrestrial living resources.
III. Concentrate new development in and around existing developed areas and population centers while protecting rural lands and the associated agricultural economy.
IV. Enhance the environmental quality and community design in new and existing communities.
V. Develop a sense of stewardship for the Patuxent River and its watershed through increased public education and participation programs.
VI. Provide sufficient funding and staff to support continued programs, policies, and projects to meet the 10 recommendations of the Policy Plan.

Patuxent River Commissioners and residents attend a briefing in Benedict on the nearby Swanson Creek oil spill.

Commissioner Larry Cartano helps two students plant trees along Midway Branch.

2001 Priorities

Patuxent River Policy Plan

During 2001, the Commission will seek adoption of the Patuxent River Policy Plan Addendum by the Maryland General Assembly.

Swanson Creek Oil Spill and Pipeline Safety

The Commission will continue to actively participate in the development and implementation of a restoration plan for the lower Patuxent River that was impacted by the oil spill. The Commission will also advocate for increased pipeline safety throughout the state.

Tributary Strategies and the New Bay Agreement

The Commission will help develop the

Patuxent River Commission Vision Statement

We, the Patuxent River Commission, envision a Patuxent River ecosystem as vital and productive in 2050 as it was in the 1950s. We therefore commit to be stewards and advocates for the Patuxent River and to lead and inspire actions to protect, enhance, and restore living resources and the natural, cultural, economic, and recreational values of the Patuxent River and its watershed.

new Tributary Strategies in 2001. The Commission will also assess its roles and priorities for implementing the objectives of the Chesapeake 2000 Agreement in the Patuxent watershed.

Patuxent Environment-Economic Model

The Commission will work with the University of Maryland Institute for Ecological Economics, Chesapeake Biological Laboratory, to develop scenarios and models for Patuxent watershed policymakers to assess alternatives for stormwater management, land use, and septic systems.

Riparian Buffer Planting Workgroup

The Riparian Buffer Planting Workgroup will continue to work with DNR's Stream ReLeaf program and local agencies to identify priority areas for reforestation in the watershed. The workgroup will also secure funding and equipment for plantings and identify community groups (e.g., scouts, homeowner associations, civic groups, and schools) to involve in the plantings.

Patuxent Paddling Path Workgroup

In 2001, the Patuxent Paddling Path Workgroup will expand and improve the Paddling Path database and interactive map and publicize its availability. The workgroup also plans to identify and acquire a low impact public access site in the watershed suitable for a canoe launch, an aquatic nature trail, and other educational and recreational activities. The workgroup is working with state and local government agencies, local land-acquisition organizations, and local citizen groups to purchase a tract of land for this purpose. The workgroup will pursue a federal Transportation Equity Act for the 21st Century (TEA-21) grant through the State Highway Administration to provide funding assistance for the project.

Public Outreach and Education Workgroup

For 2001, the Public Outreach and Education Workgroup will continue to develop and promote the Public Outreach Inventory Database. The workgroup has begun discussions with DNR to post the Public Outreach Inventory Database on the Tributary Team website, to update the existing database, and to identify long-term resources for expanding, using, and maintaining a similar database for all watersheds. The workgroup plans to contact and incorporate the many groups who are still not represented in the database. The workgroup will also use the assistance of all state and local agencies and Commission representatives, particularly those with active outreach programs, to publicize the project and increase participation.

The Public Outreach and Education Workgroup will also continue to present the "Making a Watershed Difference" outreach display in 2001. This display identifies local involvement possibilities for interested citizens and provides information regarding the Commission's watershed-wide mission. Throughout 2001, the Commission will identify and present this display at specific events in each county of the Patuxent River watershed.

During Patuxent River Days, Paula McLelland and Meosotis Curtis take the opportunity to educate scores of local residents about the Patuxent watershed and the impacts citizens can have on it through a variety of educational displays and programs.

Upper Eastern Shore

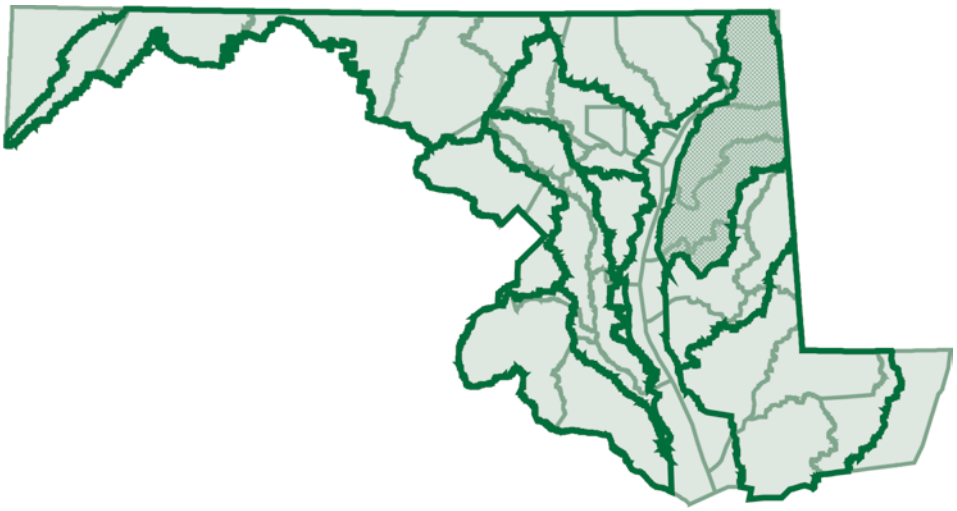
Watershed Heroes

Pat Herold Nielsen

The team is lucky to have Pat for a member. A freelance writer and producer of TV programs and mother of two sons, Pat and her husband Ed Nielsen split their time between a brownstone in Brooklyn, NY and a farm in Centreville, MD. Early inspirations for her watershed volunteerism were the stories she produced on the hazardous waste impacts of Love Canal and on the plight of Long Island baymen. Pat was a founding board member of the Chester River Association and the Upper Eastern Shore Tributary Team. She works tirelessly to create local partnerships that encourage people to get involved in watershed issues. A current effort is the Corsica River Conservation Landscaping Project that aims to improve water quality by educating residents about green infrastructure and the use of native plants and involving them in habitat restoration.

Joy Levy

Joy has made significant contributions to the Team since she joined 2½ years ago. A native of Baltimore County, she moved to Chestertown 3 years ago with her golden retriever, Kenai, when she attained a position as a community planner with Queen Anne's County Department of Planning and Zoning. In her position, Joy focuses on county conservation initiatives, such as the Agricultural Land Preservation Foundation Program, Rural Legacy, and developing a Scenic Byway with neighboring counties. As a Team member, Joy has lent her expertise in helping to coordinate and implement the habitat restoration project for Chino Farms and to develop a Critical Areas brochure for Queen Anne's County. Joy feels like she is making a difference by being a Team member and is impressed with the energy and cooperative spirit of the Team members who come from all walks of life.



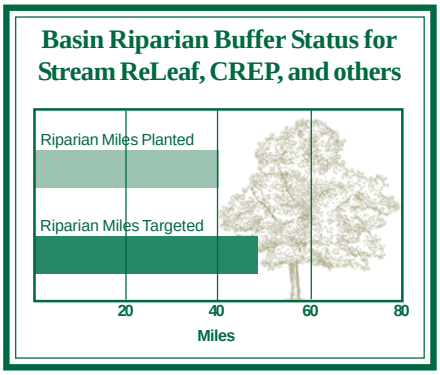
About the Team

For the Upper Eastern Shore Tributary Team, 2000 was a year of partnerships. The Team established relationships with a variety of different constituencies, including state legislators, county and municipal officials, town managers, county planners, wastewater treatment plant operators, engineers, developers, realtors, waterfront homeowners, and the general public. These partners combined resources, technical expertise, creative project ideas, and practical planning to achieve a number of successful projects in the watershed. A few examples of these projects include distributing Critical Areas information to area homeowners, conserving vital habitat at Chino Farms, co-sponsoring the Corsica Conservation Landscaping project, establishing a tree grow-out station at Kent County High School, and conducting a tree give-away with local homeowners living within the Critical Area. More complete explanations of these projects and other initiatives can be found in the Accomplishments section.

Accomplishments

Chino Farms Project

In 1999, the Team received habitat restoration grant funding to restore wildlife habitat on Chino Farms in Queen Anne's County. The project included partnerships with Chino Farms, Inc., Queen Anne's County Department of Planning and Zoning, McCrone Inc., and the Maryland Department of Natural Resources (DNR). In 2000, the partners utilized Maryland's Green Infrastructure Assessment (GIA), which employs the latest geographic information system (GIS) technology and data, to identify ecologically valuable habitat and high priority areas that need to be restored in order to provide wildlife with corridors for migration and continuous habitat areas, or "hubs." This project represented the first use of GIA and will contribute significantly to the ecology of the surrounding area. With matching funds from the County Forest Conservation Act and Critical Area fee-in-lieu funds, specified areas of Chino Farm property have been set aside for tree plantings in spring 2001.



Corsica River Conservation Landscaping Project

In May, the Team along with sponsoring partners from Adkins Arboretum, the Chester River Association, the U.S. Fish and Wildlife Service, Queen Anne's County Extension Service, Maryland Cooperative Extension Master Gardeners, the Critical Area Commission, and the Town of Centreville hosted an eight part seminar series for local gardeners focused on the ecosystem dynamics of native landscapes. This effort is the first step in a long-range project to improve water quality in the Corsica River watershed. Funded through a National Fish and Wildlife Foundation grant, an important goal of the project is to create a constituency of informed citizens who will support and implement habitat restoration projects in the watershed. From 35 to 50 people attended each class. Now, a core group of participants is identifying natural areas in the community that need habitat restoration. Their first project was to install a native plants garden at the gateway to Centreville on Route 213 South. At the end of 2000, the Team was awarded Annual Tributary Team Habitat Restoration Grant funding to conduct streamside restoration along Mill Stream.

Roundtable to Develop the Agro-Ecology Center

On May 11, Team members participated in a focus group with representatives from the Choptank and Lower Eastern Shore Tributary Teams to recommend goals and objectives for the new Maryland Center for Agro-Ecology. The center is a non-profit corporation formed by a diverse coalition of Maryland leaders to preserve the Bay and Maryland farms, forests, and other open spaces while enhancing the competitiveness of Maryland's agricultural and natural resource-based industries. The discussion addressed previous program successes and failures, priority challenges and emerging issues, the effectiveness of "measurements of success," and suggested changes that would improve the effort of protecting water quality and agricultural partnerships in the region.

Critical Area Homeowner Education

In 1984, the Maryland General Assembly enacted the Chesapeake Bay Critical Area Protection Program to safeguard the fragile land within 1,000 feet of the tidal influence of the Bay since development in this "Critical Area" has direct and immediate effects on the health of the Bay. During 2000, the Team learned that only Kent County in the Upper Eastern Shore watershed provided homeowners with Critical Area guidance. Recognizing the need to educate all homeowners within the Critical Area, the Team learned about other Maryland county Critical Area homeowner education programs and used this information to encourage the three remaining counties in the watershed to establish their own programs. Since then, Queen Anne's County has developed a publication entitled "Citizen's Guide to Chesapeake Bay Critical Area Law," and Cecil and Talbot Counties are in the process of establishing homeowner Critical Area guides.

Team Membership

Team Members

Alan Girard, Co-Chair, Pickering Cr. Audubon Ctr.
Jerry Land, Co-Chair, Citizen
Jack Ashley, Ashley Brothers Realty
Darrell Byerly, Farmer
Dan Cowee, Talbot County Planning and Zoning
John Foster, Citizen
John Earl Hutchison, Talbot County Farm Bureau
Bill Jeanes, Jr., Farmer
Bill Jenkins, MD Dept. of Natural Resources
Conrad Langenfelder, Farmer
Joy Levy, Queen Anne's Co. Planning and Zoning
Michael Little, Cecil County Planning and Zoning
Pat McClary, Gunther and McClary Real Estate
Andrew McCown, Echo Hill Outdoor School
Thomas H. Miller, Wye Research and Ed. Center
Nancy Metcalf, Natural Resources Cons. Service
Michael Moore, Dukes-Moore Insurance
Pat Herold Nielsen, Chester River Association
Gail Owings, Kent County Planning and Zoning
Irving Pinder, Jr., Citizen
Alan L. Quimby, Queen Anne's Co. Public Works
Hans Schmidt, Farmer
Brennan Starkey, Starkey Farms Inc.
Mike Whitehill, McCrone, Inc.
Bob Willard, Willards AGRO Service

Participants

Hans Albertsen, Alpha Environ. Research Group
Richard Crowley, Citizen
Gia Grier, Washington College Student
Ann Wilmer Hoon, Citizen
Bruce Mertz, Future Harvest
Ron Lesher, Citizen
Annabelle Lesher, Citizen
Jim Price, Chesapeake Bay Acid Rain Foundation
Dr. John Williams, Canal Banks Study Committee

Team Coordinator

Susan Phelps Larcher

Kent Co. High School Tree Grow-Out Station

In June, Team members, Kent County High School students, and volunteers planted 1,225 bare-root tree seedlings into pots to establish a tree grow-out station at the high school. The Team sponsored the grow-out station through funds from the U.S. Environmental Protection Agency. On October 7, Team members distributed approximately 900 trees from the grow-out station to 24 Critical Area landowners in the watershed. The overall goals of the program were to encourage waterfront landowners to establish riparian buffers on their property, increase awareness about the Chesapeake Bay and the importance

Watershed Hero Pat Harold Nielsen (right) and others break ground for the Corsica River Conservation Landscaping Project.

of riparian buffers, and introduce the Tributary Teams to the community. Kent County High School students will plant the remaining trees on the high school grounds.

Second Annual Wade-In at Horsehead Wetlands Center

On June 10, approximately 30 people waded into Eastern Bay at the Horsehead Wetlands Center in Grasonville to participate in the Upper Eastern Shore's 2nd Annual Wade-In. The original wade-in event was initiated 13 years ago when retired State Senator Bernie Fowler waded into the Patuxent River to see how far he could go before losing sight of his feet. This "Sneaker Index" is a non-technical method of measuring water clarity that has helped draw attention to the importance of water quality in the rivers that flow into the Chesapeake Bay. The Team's wade-in was held in partnership with the Wildfowl Trust of North America and the Chester River Association. The event also included guided tours, birdwatching, reptile and bird of prey presentations, and fish seining demonstrations.

Alliance for the Chesapeake Bay's Streamside Buffer Video

Team members collaborated with the other Maryland Tributary Teams and the Alliance for the Chesapeake Bay to develop a streamside buffer video to educate the public on the importance of adequate forest buffers to protect aquatic life and habitat. After the video was produced, Team members worked with Southern States, Hilly's Garden Center, and Wal-Mart to show the video in their retail centers.

Water Chestnut Eradication

Team members assisted in the outreach and eradication of the invasive Water Chestnut (*Trapa natans*) in Lloyd's Creek, a tributary of the Sassafras River. Due to the outstanding commitment of volunteers in the eradication effort, it was not necessary to apply herbicides to exterminate this invasive, exotic submerged aquatic vegetation.

Waterfront Landowner Mapping Project

Team members developed a mapping database that delineates all the waterfront landowners in the Upper Eastern Shore counties. Several outreach efforts and implementation projects were planned as a result of this project.

Review of the Phosphate Ban

The Team requested the Maryland Department of the Environment and the U.S. Environmental Protection Agency to review the exemptions it gave in the Phosphate Ban of 1985, particularly for manufacturers of dishwashing detergents, the U.S. Treasury, and hospitals. The goal of the review is to update the exemptions, taking into account new technologies. The U.S. Environmental Protection Agency has agreed to look into this issue.

Conservation Reserve Enhancement Program

An Upper Eastern Shore Team member presented information about the Conservation Reserve Enhancement Program (CREP) at the Kent County Farm Bureau Annual Meeting. Tributary Team members also reviewed and commented on CREP proposals.

Public Education and Awareness

The Team invited community members and other watershed organizations to monthly meetings where guest speakers provided insights and expertise on key issues or innovative programs. Dr. John Williams, from the Canal Banks Study Committee created by Congressman Wayne Gilchrest, spoke at the Team's February meeting about why the dredge disposal should not be placed at Site 104. As a result, the Team prepared a letter to the Governor, recommending that Site 104 not be used for dredge disposal. Lamonte Garber, from the Environmental Quality Initiative, spoke at the Team's June meeting about his Pennsylvania-based nonprofit organization that is dedicated to the belief that consumers can help protect the environment and support local farmers by making informed food purchases. Jim Price, from the Chesapeake Bay Acid Rain Foundation, gave a presentation at the August meeting on the importance of menhaden as filter feeders of the Bay and the need to implement conservation measures for this fishery.

Public Meetings

The Team held two public meetings to encourage community awareness and involvement in the watershed and the Bay. On March 2, the Team co-hosted a public meeting with the Choptank Tributary Team at Chesapeake College to give the community an opportunity to review and comment on the draft Chesapeake 2000 Agreement. On March 13, the Team held a public meeting where Kelly Eisenmann, from

the Chesapeake Bay Program, informed the participants about the status of chemical contaminants in the Chester River. More than 50 citizens attended this presentation that raised questions about the accuracy and completeness of the Chesapeake Bay Program's data and left participants with the view that the Middle Chester River was under great stress and in need of attention. The Team plans to address these concerns in 2001 through its involvement in the Watershed Restoration Action Strategy for the Middle Chester River.

Outreach and Education

Upper Eastern Shore Tributary Team staff and members manned Tributary Team displays at the Chesapeake Farms Field Day and Wye Research and Education Field Day this year. The booth attendees used these outreach opportunities to spread the word about the Tributary Strategies Program, the Upper Eastern Shore Tributary Team, and the importance of environmental stewardship.

2001 Priorities

During November and December of 2000, the Team reviewed the goals of the Chesapeake 2000 Agreement to determine priorities for the Team in the upcoming year, for the future, and with the upcoming revision of the Tributary Strategies. Based on their review, the Team came up with a number of general and specific initiatives. General initiatives include increasing communication with local governments and watershed organizations, writing Team articles for local newspapers, expanding outreach and involvement with local communities, and increasing Team diversity with minorities, educators, developers, and business representatives. The Team established the following specific initiatives for 2001:

Middle River WRAS

Initiated by the Clean Water Action Plan of 1998, the Watershed Restoration Action Strategy (WRAS) program seeks to identify priority watersheds and work with local communities to design and implement a comprehensive water quality and habitat improvement program. Maryland currently has five WRAS programs underway – one of which is for the Middle Chester River. The Team has offered to support the Middle Chester WRAS since it encompasses a wide array of the Team's top priority goals. This support may include encouraging the involvement of local governments, watershed organizations, and community members in the project; participating in project and document reviews; establishing tree grow-out stations for buffer plantings; and assisting in the coordination of restoration and protection initiatives.

Parents and children take time out to explore their tributary during the Team's Annual Wade-In.

Corsica River Conservation Landscaping Project

At the end of 2000, the Team was awarded Tributary Team Habitat Restoration Grant funding to continue the next phase of its Corsica River restoration project. During 2001, the project's partners will work to restore Mill Stream, a tributary of the Corsica River. This phase of the project includes expanding a small streamside garden planned and installed during Phase I of the project. The partners will develop an educational walkway with interpretive signs and a brochure and will complete a habitat survey and action plan to begin to restore a marsh that is adjacent to the stream.

Watershed-Based Indicator Atlas

A watershed-based indicator atlas combines data from different sources to create a document that provides a consolidated view of land uses and indicators of a watershed. These atlases are great tools for understanding the current condition of a watershed and what needs to be restored or protected in the future. The Upper Eastern Shore Team plans to work with DNR to prepare an atlas for its watershed. As part of the process, the Team will review existing atlases to determine desired elements. The Team will also engage the different constituencies that make up the Upper Eastern Shore in the project to determine the information and issues that should be addressed in the document in order to make the atlas a useful tool for a wide spectrum of people.

Meeting with Chairman Ron Guns

In December 2000, the Team invited Delegate Ron Guns, Chair of the Environmental Matters Committee, to talk about important issues for the upcoming legislature. Delegate Guns was concerned about the need to establish reasonable limits on the blue crab harvest. His primary concern, however, is the status of Maryland's combined sewer overflows and sanitary sewer overflows. These antiquated sewer systems are breaking down in some areas of the state and causing sewage spills and defeating nutrient reduction efforts in some waterways. Delegate Guns asked the Team to assist him in determining methods to resolve this issue.

Trib Team Quick Fact

There are currently 32 lighthouses in and around the Chesapeake Bay region. At one time, the highest number of lighthouses reached 72.

Upper Potomac

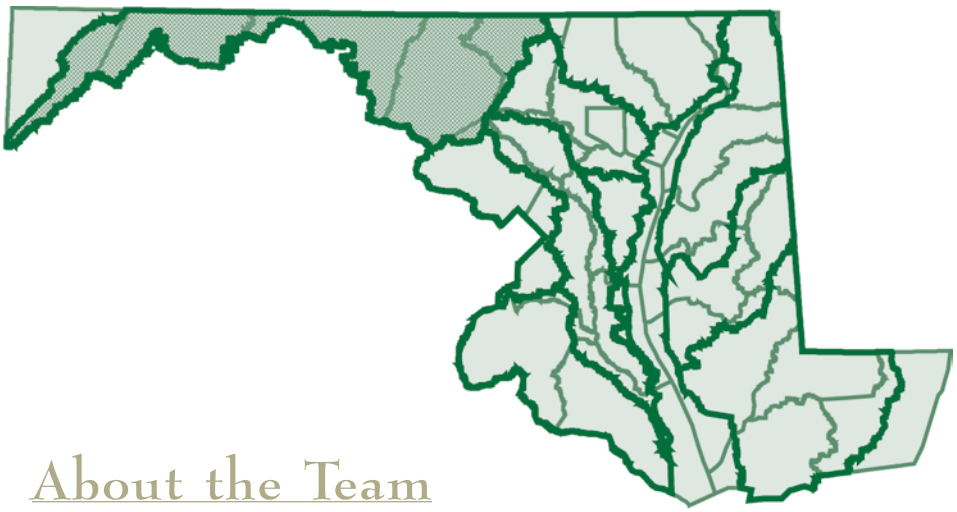
Watershed Heroes

Carlton Haywood

Carlton is an 18 year veteran of the Interstate Commission on the Potomac River Basin. His activities include program development and management, grant writing, technical participation, and representing the Commission on various state and federal interagency committees. He presently chairs the Chesapeake Bay Program's Monitoring Subcommittee and is a member of the Implementation and Budget Steering Committees. Carlton works closely with neighboring state water quality programs and is an important conduit of information for the Team. He appreciates the Team's camaraderie and its willingness to work together. Carlton advocates the important role of farmers and their efforts to reduce nitrogen and phosphorous pollution. He believes the Team should identify remediation projects and looks forward to the Team promoting outreach and education efforts to Pennsylvania and West Virginia citizen groups.

Carole Larsen

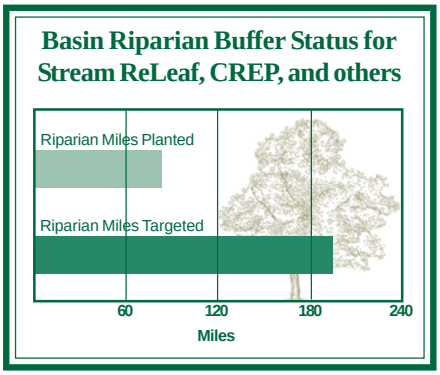
Carole Larsen has been the Frederick County local government contact for the Upper Potomac Team since its inception. Drawing on more than 20 years of experience as an environmental planner, Carole has been instrumental in providing the Team with a broad-based network of professionals, elected officials, and citizens that can support the Team's projects and initiatives. As her county's sole environmental planner, Carole keeps her finger on the pulse of the county's natural resource issues. She appreciates her experience as a Team member and enjoys seeing people come together to achieve common goals. Carole has been active on the Local Government Workgroup and worked hard on the development of the Chesapeake 2000 Agreement. Besides all her other contributions, Carole serves the Team by being a great field photographer.



About the Team

As the Upper Potomac Tributary Team pushed forward with its 2000 goal to increase education and outreach efforts in the region, the members became aware of many new issues pertinent to water quality and programs available for its protection, such as the Conservation Reserve Enhancement Program (CREP). The Team continues to educate its communities and learned that it must face two outreach and education challenges in order to meet its goal.

First, the Upper Potomac Team needs to reach out to its West Virginia neighbor, identify existing watershed associations, and offer to partner with them on projects. Secondly, the Team needs to look at small watershed areas that do not have watershed associations and encourage new and dynamic alliances through Team networking and presentations. To this end, Team members provided assistance and educational information to the following local watershed groups in 2000: Evitts Creek Steering Committee, Town Creek Association, and the Georges Creek Watershed Association.



Team members were also instrumental in establishing a new watershed association for Braddock Run in 2000.

Accomplishments

Education and Outreach

Allegany County is unique. It is located in Western Maryland and bordered by West Virginia and Pennsylvania. Many Western Maryland builders and developers view Maryland's development regulations as detrimental to economic growth, making the neighboring states more attractive for development. Recognizing this, the Team launched an education and outreach program targeting developers, builders, contractors, consultants, government officials, and landowners. The goal was to educate in order to reduce the need to regulate. In 2000, the Upper Potomac Tributary Team was successful in increasing the understanding of growth and development issues and, as a result, many contractors now understand how regulations complement their efforts to

create a healthy, viable community.

On April 11, Alison Rice and Craig Hartsock presented a program highlighting the work of the Upper Potomac Tributary Team to fifth and sixth grade students from Georges Creek Elementary School as part of their Career Day. Students were introduced to the importance of the Chesapeake Bay and how activities in Western Maryland affect the habitat and water quality of the Bay.

On May 25, Craig Hartsock, Alison Rice, Bob Thompson, and volunteer Laurie Hartsock accompanied 55 fifth and sixth grade students on a stream walk and clean-up of Georges Creek, located immediately behind their school. Students were then rotated through three stations in which resource professionals from the Maryland Department of the Environment, Allegany Soil Conservation District, and the Allegany County Department of Community Services explained the impacts of development on flood plains, water quality, and soils.

Stormwater Management and Site Development

The Allegany County Department of Community Services, the Upper Potomac Tributary Team, and the Allegany Soil Conservation District held a joint conference on March 29 at the Rocky Gap Lodge and Conference Center. The goal of the conference was part of a continuing federal, state, and local effort to educate the public about stormwater management. "We feel that workshops like this one build partnerships between the public and private sectors and promote sound development practices," said Alison Rice, Tributary Team member.

The workshop hosted speakers from the Maryland Department of the Environment, the Natural Resource Conservation Service, Allegany Soil Conservation District, Maryland Emergency Management Administration, Applied Drainage Systems, Allegany County Department of Public Works, and the Allegany County Department of Community Services. More than 130 land owners, government officials, consultants, engineers, members of watershed associations, and developers attended.

In May, the Team participated in a 4 acre riparian buffer planting project with the Maryland Department of Natural Resources (DNR) Forest Service along Carroll Creek in the City of Frederick. Heavily impacted by land development, this urban stream system was planted with willow, sycamore, red maple, and ash trees to help manage flood water, enhance riparian habitat for wildlife, and enlarge the greenway along Carroll Creek that bisects the City of Frederick.

Rocky Gap State Park "Fish-In"

The Upper Potomac Tributary Team held its 3rd Annual Fish-In on June 11 at Rocky Gap State Park in Allegany County. The event promoted sound water quality practices in the Chesapeake Bay watershed. Attendance was up 20% from last year's event, with more than 50 people attending. Prizes were given for the largest, longest, and first fish caught. Team members assisted with the educational activities and the fishing contest. Participants left with grab bags filled with environmental educational information. Partners in the event included McDonalds Corporation, Potomac Valley Industrial Supply, Allegany County Soil Conservation District, Allegany County Department of Community Services, and DNR's Scales and Tails program.

CREP Implementation and PEPCO Tours

Pat and David Schooley hosted the August Tributary Team meeting at their farm in Washington County along Antietam Creek. The Schooleys have planted approximately 6,700 trees through CREP. CREP encourages farmers to retire agricultural land along streambanks by providing above normal rental rates for the land if the farmer plants a riparian buffer, sets aside highly erodible lands, or restores a wetland.

Meeting attendees toured the farm's 23 acres of warm season grasses that were planted in partnership with Ducks Unlimited and CREP. Washington County District Conservationist Jim Schlossnagle explained the benefits of

Team Membership

Team Members

Craig Hartsock, Chair, Allegany Co. SCD
Robert Thompson, Vice Chair, Potomac Valley Industrial Supply
Dan Bard, Maryland Department of Agriculture
Chris Batten, Business
Patricia Baumgardner, Citizen
John DeNoma, NaturaLawn of America
Bill Effland, Citizen
Tim Goodfellow, Frederick Co. Dept. of Planning
Carlton Haywood, ICPRB
Richard Holter, Farmer
Ellie Kirsch, Izaak Walton League
Carole Larsen, Frederick Co. Dept. of Planning
Paul Massicot, MD Dept. of Natural Resources
Ray Morgan, University of Maryland
Alison Rice, Allegany Co. Dept. of Planning
Patricia Schooley, Citizen

Participants

Hilari Benson, Community Commons
Laurie Hartsock, Citizen
Meredith Lathbury, Potomac Conservancy
Dawn Lindstrom, Hood College
Joseph Beaman, Fort Detrick

Team Coordinator

Claudia Donegan

these grasses, and the Schooleys explained how the wildlife have increased in number and diversity since the grasses were planted. The 14.2 acres of mixed hardwoods have had an 87% survival rate despite the 1999 summer drought. In one section of trees, Pat used wool from her sheep as mulch and found that it worked visibly better than conventional mulch! The Team commends the Schooleys for putting into practice many of the programs promoted by the Tributary Team and other conservationists.

In September, the Team toured the Potomac Electric Power Company (PEPCO) plant in Dickerson, Maryland. This plant is located on the shores of the Monocacy and Potomac Rivers. The Team learned about PEPCO's extensive environmental program that reduces the plant's environmental impacts on the Potomac River.

WRAS for Georges Creek

Initiated by the Clean Water Action Plan of 1998, the Watershed Restoration Action Strategy (WRAS) program works with local communities in priority watershed to develop and implement projects and activities to restore and maintain the watershed's environmental integrity. The program is designed to be a cooperative effort that engages all levels of resources (federal, state, local, and private).

Trib Team Quick Fact

The Upper Potomac River Basin is home to more than 75% of the state's freshwater fish species. It also includes up to 60% of the 160 Maryland tree species.

Through a comprehensive Unified Watershed Assessment, Maryland identified 58 of its basins as Category 1 priority restoration watersheds. In 2000, the state began partnering with counties to initiate WRAS projects in five of these watersheds.

As part of a 2 year partnership agreement with each WRAS, DNR is providing WRAS development funds for various watershed planning and assessment efforts and for riparian corridor assessments. In addition, DNR is providing technical assistance to the counties, including a watershed characterization document for each of the five watersheds.

Georges Creek is one of the five Maryland watersheds to initiate a WRAS in 2000. Team Member Alison Rice is representing the Upper Potomac Team on the Georges Creek WRAS Steering Committee. Tributary Team involvement in this program includes encouraging the involvement of local governments, watershed organizations, and community members in the process; participating in project and document reviews; and helping coordinate and implement restoration and protection initiatives.

Students from Westmar Middle School participated in a "Watershed Activity to Encourage Restoration" (WATER Day). More than 100 students served as stewards of their watershed by helping pick up debris and trash along Georges Creek.

2001 Priorities

Outreach and Education

The Upper Potomac Tributary Team plans to expand its Speakers Bureau beyond the present program to include a program on lawn care. This program will focus on what homeowners can do to reduce nutrient pollution and runoff from their lawns and in their communities. This focus will give the Team presenters a platform from which to educate the general public about the Chesapeake 2000 Agreement and its commitments. John DeNoma, of NaturaLawn of America and a Tributary Team member, will lead the effort to educate landowners about the economic and environmental costs of over-fertilization and the resulting effects of nutrient pollution in water bodies.

In addition, the Team plans to expand its network in the Upper Potomac watershed and with neighboring West Virginia groups that impact its watershed. To achieve this goal, the Team will continue to gather information on small watershed associations in the Upper Potomac region and begin to

partner with these groups on watershed restoration projects and education programs. The Team will also attend workshops and events in West Virginia that focus on water quality issues and invite these groups to attend Team meetings and events.

New Tributary Strategies

In 2001, the Team will prepare and submit its comments to the draft Interim Nutrient Cap Strategy. The Nutrient Cap Strategy Workgroup was formed in September 1999 to develop an interim nutrient cap strategy for Maryland by March 2001. The purpose of this strategy is to overcome the shortfall in meeting the nutrient goal, offset the anticipated growth in load, identify long-term issues and needs, and transition to the new Tributary Strategies. The Team plans to provide the Nutrient Cap Strategy Workgroup with ideas on how to develop and implement future Tributary Strategies to meet the revised nutrient reduction goals, which are expected to be more stringent.

At the Maryland's Chesapeake Bay Partnership Agreement Ceremony with the Governor, Alison Rice signs on behalf of Allegany County while Team Chair Craig Hartsock bears witness.

Monocacy River Watershed Restoration

In the year ahead, the Upper Potomac Team will begin to restore a degraded farm parcel in Frederick County and convert it into a recreational park. The end goal of the project is to make this park a living classroom and an outdoor laboratory for area residents and schools.

Team Vice Chair Bob Thompson talks with prospective members at the Tributary Team New Member Reception held in July.

The site is located in the Lower Monocacy River watershed. It contains palustrine wetlands and a tributary to Bush Creek, which is part of the Monocacy River watershed. According to Maryland's Unified Watershed Assessment, the Lower Monocacy River watershed is both a Category I (needing restoration) and a Category III (needing protection) watershed.

Utilizing Habitat Revitalization Grant funds, the Upper Potomac Tributary Team will oversee the planting of 24 acres of deciduous trees, shrubs, and warm season grasses at the park. These plantings will enhance natural areas for wildlife and improve the quality of water entering the mainstem of Bush Creek. Since the property through which the steam flows will be developed as a park, the plan includes the placement of interpretive signs throughout the riparian buffer area to educate the general public about environmental stewardship, water quality, wildlife, and aquatic habitat enhancements.

This restoration project will afford excellent opportunities for public participation and collaborative partnerships that will enlighten people about the value, function, and importance of riparian buffers and wetlands. One of the groups who will participate in this project is the Deer Crossing Elementary School from New Market, Maryland. The Team will also partner with the Potomac Conservancy, the Community Commons of Frederick, the Izaak Walton League of America (Frederick Chapter #1), and the Gambrill Park Office of DNR's Forest Service. These partners will create a 2 acre public planting project that will educate citizens about water quality, environmental conservation, and the Tributary Strategy Program.

Upper Western Shore

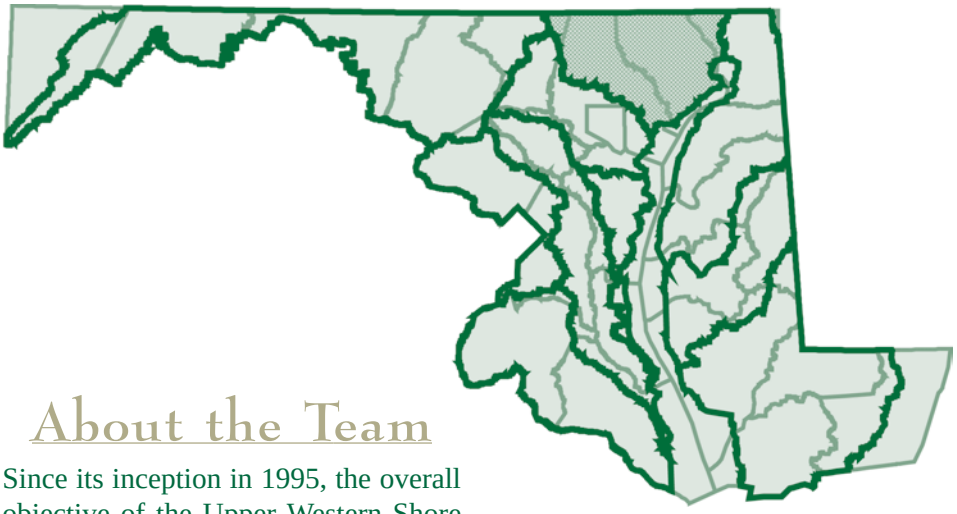
Watershed Heroes

Skip Pieper

Skip is a dairy farmer who surpasses boundaries. He has cows milked in Baltimore County that sleep in Harford County, and cows milked in Harford County that sleep in York County, Pennsylvania. Skip is also a farmer who tries to incorporate the latest environmental ideas into his daily farming practices. In 2000, he opened his farm to more than 800 visitors during Farm Visitation Day to demonstrate his innovative farming practices. Besides being a farmer, husband, father, grandfather, and Trib Team member, Skip serves on a variety of other organizations, including County Fair Superintendent, Farm Bureau Board, and the local 4-H Club. Skip serves on the Team because he wants to ensure that the farmer's voice is represented and because of his strong desire to leave the earth as good or better than he found it.

Jim "Doc" Bailey

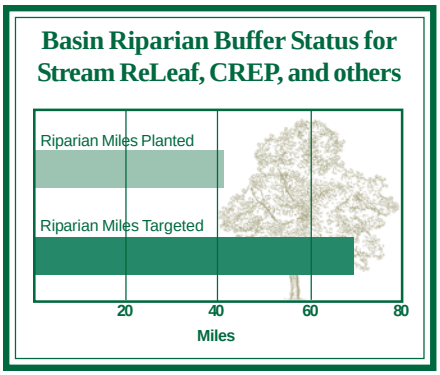
Jim is a man with many missions. For more than 12 years, he has worked as a biologist for Aberdeen Proving Ground, managing the natural resources of the installation, integrating the military's training mission with environmental considerations, and coordinating the installation's Chesapeake Bay initiatives. Jim has worked to ensure that the transfer of the installation's wastewater treatment plant to the Town of Aberdeen is a success. He has partnered with local communities to establish watershed management plans for Swan Creek and Winter's Run and oversees the installation's submerged aquatic vegetation restoration and monitoring program. He serves as the Team's Tracking Workgroup chair to ensure that local data are accurately represented at the state level. Further, Jim helps coordinate environmental education programs for Harford County by serving on the Board of Directors at Harford Glen, serves on the Board of Directors for the National Military Fish and Wildlife Association, and volunteers with DNR's Stream Waders Program.



About the Team

Since its inception in 1995, the overall objective of the Upper Western Shore Team has been to support actions that ensure the attainment of the Bay's 40% nutrient reduction goal. To meet this objective, the Team is structured into six workgroups – Agriculture, Outreach and Education, Point Sources, Resource Protection, Urban Lands, and Tracking. These workgroups combine the different talents and interests of Team members to communicate and partner with other agencies, organizations, and citizens to identify and implement an array of initiatives that achieve nutrient reduction.

For the Team, 2000 was a year of accomplishment and reflection. Several key initiatives came to fruition or were initiated during this year. With the signing of the Chesapeake 2000 Agreement, the development of the draft Interim Nutrient Cap Strategy Report, and the impending revision of the Tributary Strategies, the Team used several of its meetings to educate its members about the new initiatives and their impact on the Team and the watershed. The Team also focused on reaching out to and educating more community members and a greater diversity of people. By the end of 2000, the Team analyzed its role in regard to the new agreement and began identifying its priorities for 2001 and beyond.



Accomplishments

General Team Activities

During 2000, the Team utilized some of its meetings to learn about issues or innovative projects affecting its watershed. These topics included the Lower Susquehanna Heritage Greenway, Aberdeen Proving Ground's submerged aquatic vegetation program, Maryland Biological Stream Survey results of the Bush River and the effects of impervious surfaces on streams, and the draft Interim Nutrient Cap Strategy. On May 24, the Team took a tour of the Sod Run wastewater treatment plant in Perryman, Maryland to learn about biological nutrient removal.

On June 11, Team members, representatives from the Anita C. Leight Estuary Center, the Otter Point Creek Alliance, Harford County Executive Jim Harkins, and families from all over the

watershed held hands and waded into Otter Point Creek as a part of the 3rd Annual Upper Western Shore Wade-In. The event, initiated 13 years ago by retired Maryland State Senator Bernie Fowler, is a unique way to gauge the health of a waterway by seeing how far one can wade into the water without losing site of their feet. The wade-in included family-oriented and educational activities, such as canoeing, children's games, face painting, and seining.

Agriculture Workgroup

In 2000, the Agricultural Workgroup continued to work with Soil Conservation Districts (SCDs) to provide the Chesapeake Bay Program Tracking Committee with accurate and consistent data. Workgroup members assisted in the review of six Rural Legacy applications for the Upper Western Shore watershed.

On June 25, the Team participated in Farm Visitation Day. The event, sponsored by the local county farm bureaus, simultaneously took place at Woolsey Farm in Harford County, Skip Pieper's dairy farm in Baltimore County, and North Harford High School. The goal of the day was to educate the non-farm community about the efforts farmers are making to reduce nutrient and sediment run-off and to restore and protect the Bay. Team members manned outreach displays at both farms and provided information on nutrient management, soil conservation, and the Tributary Strategy Program.

The workgroup partnered with the Harford County SCD to obtain grant funding so that North Harford High School could add secondary treatment to its wastewater treatment plant. This innovative project was incorporated into the school's science program. Students helped the SCD and contractors design and build a 1.7 acre wetland that will provide additional nutrient reduction to the school's wastewater treatment plant. The project will continue to be a part of the school's curriculum as students continue to monitor local stream water quality and grow and test wetland plant species.

The Team also signed a multi-Team cover crop letter that was sent to the Governor's office in November 2000. The letter requested increased funding for the Eastern Shore cover crop program and an expansion of the program statewide.

Outreach and Education Workgroup

On February 28, the Upper Western Shore and Patapsco/Back Tributary Teams held a public forum at Essex Community College to give Team members and other watershed residents an opportunity to review and comment on the draft Chesapeake 2000 Agreement. In March, the Teams reviewed, discussed, and finalized a co-Team letter to the Chesapeake Bay Program Office that detailed the review comments.

Several Outreach Workgroup members have been participating in the Cross-Team Public Outreach Workgroup to create an insert for *The Baltimore Sun* newspaper that will be distributed with the Earth Day edition on April 21, 2001. This booklet, entitled "Picture Maryland – Where Do We Grow From Here?" will ask Maryland readers to think about what they want for their community and for the state's future. It will also instruct them on ways to be involved in their local water and land-use planning and decision-making processes.

Team Membership

Team Members

Charlie Conklin, Chair, Gunpowder Valley Conserv.
Stan Kollar, Vice-Chair, Harford Community College
Jack Anderson, Baltimore Metropolitan Council
Jim Bailey, Aberdeen Proving Ground
Kent Barnes, Towson State University
Keith Bowers, Biohabitats, Inc.
Cliff Bienko, Harford Soil Conservation District
Gary Davis, Harford Soil Conservation District
Louis Ensor, Baltimore County Farm Bureau
Janmichael S. Graine, U.S. Army Environmental Ctr.
Richard Hall, MD Department of Planning
Robert Halman, Harford Co. Extension Service
Glen Hedelson, Bel Air High School
Kenneth Hranicky, MD Department of Planning
Greg Kappler, Baltimore Gas & Electric Company
Michael Little, Cecil Co. Planning and Zoning
Lee McDaniel, Indian Springs Farm
Steve Nelson, Carroll Co. Bureau of Environ. Svcs.
Robert Northrup, MD Dept. of Natural Resources
Charles (Ed) Null Jr., Carroll County SCD
Donald Outen, Baltimore County DEPRM
Jo Owen, Watershed Protect. Coalition
Bob Palmer, Citizen
Skip Pieper, Farmer
Pat Pudelkewicz, Harford Co. Plan. and Zoning
Bill Stack, Baltimore City Dept. of Public Works
Steve Smith, Citizen
Steve Witt, Citizen

Participants

Julie Bortz, Citizen
Deborah Bowers, Citizen
Paul Dubois, U.S. Army Environmental Center
Martin Elliott, Headquarters, Dept. of the Army
Mark Herzog, Harford Glen Enviro. Educ. Ctr.
Robert Huddleston, Izaak Walton League
Catherine Kane, Harford County Public Works
Livingston Marshall, Morgan State University
David Reiher, Harford County Health Dept.
David Scheurer, University of Maryland Student
Jessica Schrader, Citizen
Jane Wolfson, Towson University

Team Coordinator

Susan Phelps Larcher

Several Team members staffed a Tributary Strategies booth at the Gunpowder Festival on Earth Day 2000. More than 900 people attended this event and were introduced to Maryland's Tributary Strategy Program and the Upper Western Shore Team.

Team members gave a variety of educational presentations to different groups. Jo Owen, workgroup chair, developed and presented a slide show to gardening clubs entitled "Landscaping for Clean Water," which provided information on ways to landscape with minimal impacts on water quality and water use. Ken Hranicky, presented "Who Polluted the Potomac" to a sixth grade class at Middle River Middle School to educate tomorrow's gardeners about wise land use practices. In November, Team members gave a presentation at the Bel Air Lion's Club about the Tributary Strategies Program. Members plan to keep in contact with the Lion's Club and potentially partner with them on a future project.

Point Source Workgroup

A major accomplishment in the watershed was the beginning of the construction phase of the biological nutrient removal (BNR) upgrade to the Havre de Grace wastewater treatment plant. Through their mutual participation in the Point Source Cross-Team Workgroup, the Upper Eastern Shore Team was inspired by the Upper Western Shore Team's success with Havre de Grace and has since begun to encourage towns in its watershed to incorporate BNR.

The workgroup is following the closure of Aberdeen Proving Ground's wastewater treatment plant and transfer of wastewater to the Town of Aberdeen. The Town is upgrading its plant to meet permit requirements that include BNR. The workgroup sent a letter to the Director of Public Works for Aberdeen, introducing the Team and requesting a meeting to discuss how the permit limits for nutrients will be met.

Resource Protection Workgroup

In March, the Resource Protection Workgroup organized a Stream ReLeaf Exchange at Harford Community College. Maryland Stream ReLeaf is a program to reforest 600 miles of streambanks by 2010. More than 70 people from a variety of different agencies and organizations gathered to listen and exchange information about riparian reforestation efforts. As a result, the Team continues to promote a seedling grow-out station at Harford Vocational-Technical High School. This grow-out station has supplied trees for several plantings in the watershed and has provided students with reforestation education and experience.

On September 23, Team Member JanMichael Graine coordinated and conducted a BayScapes planting at the U.S. Army Environmental Center in Edgewood, MD. BayScapes is the use of native plants for landscaping practices. More than 80 volunteers, including Senator Paul Sarbanes, Harford County Executive Jim Harkins, Edgewood Elementary School students, a local Boy Scout Troop, and soldiers, assisted in the planting project and learned about the many benefits of native plant gardens.

Team members get in touch with the Bay through an evening canoe at Marshy Point Environmental Center.

On October 28, the Team assisted with two tree plantings in the watershed. The first was part of Project Care – an effort to clean and revitalize the Town of Edgewood. Trees from the Team's grow-out station were planted around Lake Serene in an effort to beautify Edgewood and build community spirit. The second tree planting was a partnership with the Chesapeake Bay Foundation to reforest riparian areas along the Bush River.

Urban Lands Workgroup

During 2000, Bill Stack, chair of the Urban Lands Workgroup for the Upper Western Shore and Patapsco/Back Tributary Teams, participated on the Nutrient Cap Workgroup and the Chesapeake Bay Program's Tracking Subcommittee to try and resolve shortfalls in the state's reporting of best management practices. Bill demonstrated the need for more effective best management practice tracking at the local level. The Teams and local governments have since been asked to review and provide data to the draft Interim Nutrient Cap Strategy.

Through a cooperative effort with the Maryland Water Monitoring Council, the Urban Lands Workgroup from the Upper Western Shore and Patapsco/Back Teams compared local monitoring data collected by nine Municipal Stormwater Permit Programs with nutrient load projections from the Chesapeake Bay Program's Phase 4 Watershed Model and found incongruities. Team Members and the Maryland Water Monitoring Council presented this information to the Chesapeake Bay Program's Modeling Subcommittee who concurred with the findings.

Tracking Workgroup

The Team's Tracking Workgroup coordinated with the Federal Agencies Committee to provide the Chesapeake Bay Program with federal data. The

workgroup collaborated with the Urban Lands Workgroup to obtain urban water quality data and compare it with the state's data to see how well they correspond. The Tracking Workgroup also demonstrated how local monitoring data can provide more abundant and accurate information than state data, which samples at a larger scale, through a presentation by a representative from the Aberdeen Proving Ground submerged aquatic vegetation program.

2001 Priorities

During the closing months of 2000, the Team conducted an extensive review of the Chesapeake 2000 Agreement. As a result, 2001 promises to be a transition period for the Team that may include new initiatives and new workgroups. For 2001, the Team will assist in the development of the Interim Nutrient Cap Strategy and the new Tributary Strategies and continue to undertake nutrient reduction initiatives. The Team is also interested in sediment reduction and watershed initiatives – new facets to the Chesapeake 2000 Agreement that have links to nutrient reduction. To strengthen the Team, a concerted effort will be made to expand membership to involve all watershed stakeholders.

Agriculture Workgroup

For 2001, the Agricultural Workgroup will continue to support the increase in funding and statewide expansion of the cover crop program. The workgroup will continue to work with the Chesapeake Bay Program Tracking Subcommittee to ensure that accurate, standardized data are incorporated into the database.

The first deadline for the development of nutrient management plans under the Water Quality Improvement Act of 1998 will take place in 2001. The workgroup plans to support the development of these plans and to identify additional nutrient reduction attained through the plans.

The Conservation Reserve Enhancement Program (CREP) encourages farmers to retire agricultural land along streambanks by providing above normal rental rates if the farmer plants a riparian buffer, retires highly erodible lands, or restores a wetland. Members will ensure that CREP gets the support of elected officials and encourage eligible farmers to consider the program.

More than 80 volunteers rolled up their sleeves to help plant a BayScapes garden.

Outreach & Education Workgroup

The Outreach and Education Workgroup will continue to work with the Cross-Team Public Outreach Workgroup to finalize and distribute *The Baltimore Sun* newspaper insert "Picture Maryland – Where Do We Grow from Here?" The workgroup will continue to spread the word about the many benefits of native landscapes to gardening clubs and publicize the Tributary Team message to a variety of different community organizations. The workgroup will develop a contact list of watershed organizations in the Upper Western Shore and establish consistent communication ties with them to partner on overlapping projects and avoid duplication of effort. The workgroup will also adjust and market the Team's website to make it a more useful tool in communicating with other watershed organizations and community groups.

Point Source Workgroup

The Point Source Workgroup will continue to monitor and support the transfer of Aberdeen Proving Ground's wastewater to the Town of Aberdeen. The workgroup will explore the sewer overflow issues and the potential impacts to the Upper Western Shore watershed and will continue to participate on the Cross-Team Point Source Workgroup.

Resource Protection Workgroup

The workgroup will continue to support the Harford Vocational-Technical High School grow-out station and riparian tree plantings in the watershed. As a part of this effort, the Team will work to provide a system for determining the optimal buffer planting sites and will work to establish a central point of contact where tree planting groups can provide data on their efforts. The workgroup will also encourage tracking the survival rate of the new trees and will look into establishing a tree tube recycling program.

Urban Lands Workgroup

Workgroup members and the Maryland Water Monitoring Council will continue to work with the Chesapeake Bay Program's Modeling Subcommittee to suggest ways to improve the Watershed Model estimates (e.g., calibrate with local data). The group will also try to determine how the Phase 4 Watershed Model will affect the development of the new Tributary Strategies and suggest ways to improve tracking.

Tracking Workgroup

The Tracking Workgroup plans to work with the State Tracking Committee to establish a more accurate data tracking process, improve modeling, and help fine tune data to better reflect the watershed's and Bay's status. The workgroup will try to determine ways to compare, standardize, and utilize the data with other watershed and regional data.

Riparian Reforestation Efforts

One important finding of the Maryland Department of Natural Resources' (DNR's) Maryland Biological Stream Survey is that stream inhabitants are sensitive to the amount of impervious surface in the watershed. Impervious surfaces, such as rooftops, streets, and parking lots, cause a rapid increase in the rate at which water is transported from the watershed to its stream channels. Effects include more variable stream flows, increased erosion from runoff, habitat degradation caused by channel instability, increased nonpoint source pollutant loading, elevated temperatures, and losses in biological diversity.

What is a Riparian Zone?

The riparian zone is the area along the bank of a stream, river, or other water body. Vegetated riparian zones act as a buffer against pollution and are important in reducing the impacts of human activities. Forested riparian buffers provide the best stream protection. They provide shade, stabilize streambanks, and supply food and shelter for aquatic and land animals.

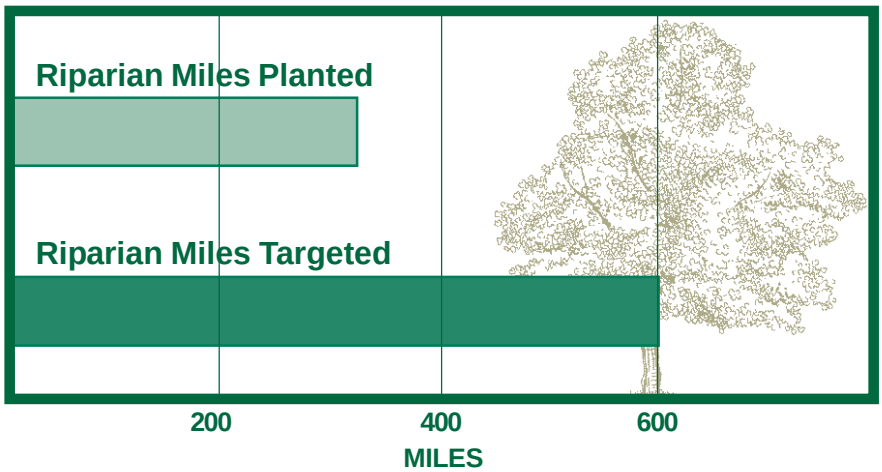
According to the Maryland Biological Stream Survey, approximately 40% of riparian miles are unforested, with 27% lacking any vegetated buffer.

According to the Center for Watershed Protection, impacts on stream quality are commonly noted when about 10% of the watershed has impervious coverage. Effects on sensitive species, such as brook trout, occur at even lower levels of impervious coverage. With impervious surfaces covering 25-30% of a watershed, studies have shown that numerous aspects of stream quality become degraded, including biological integrity, water quality, and physical habitat quality.

Riparian forest buffers, or streamside forests, help reduce the impacts of impervious surfaces on a watershed. They provide food, habitat, shelter, and nesting areas for wildlife. Their root systems help stabilize soils and moderate stream flow, thereby reducing soil erosion and scouring of the streambank. Leaves and decaying litter on the forest floor reduce soil erosion by diminishing the impact of rainfall. Forest buffers help moderate air and water temperatures, reducing drastic fluctuations that can be detrimental to aquatic life. They improve water quality by trapping and filtering sediments and nutrients before they enter the water.

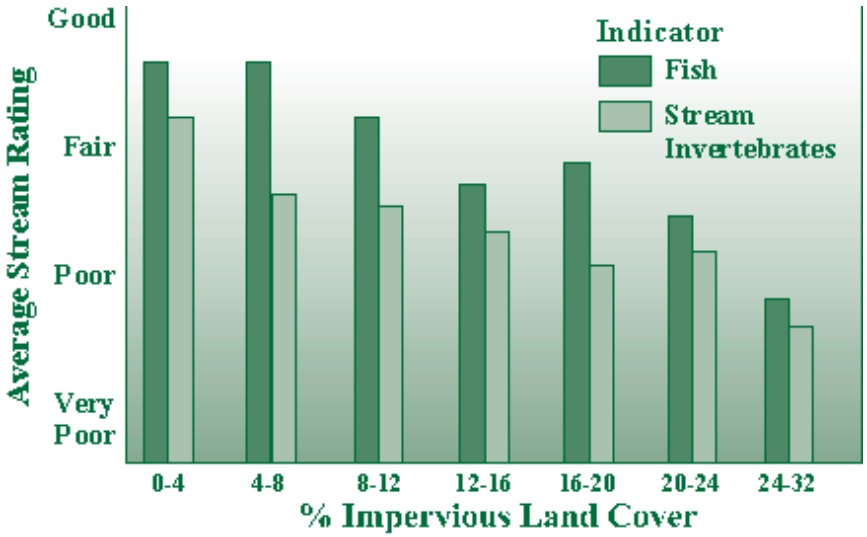
Maryland has been reforesting its streamsides. In 1996, Maryland along with the other Bay signatories signed the Riparian Forest Buffer Initiative. Through this agreement, Maryland committed to reforesting 600 miles of riparian corridor by 2010. Since 1996, volunteers, nonprofit organizations, and state and federal agencies have helped plant more than 300 miles of riparian buffers. This multi-participant approach,

Statewide Riparian Buffer Status for Stream ReLeaf, CREP, and Other Programs



Estimated total riparian miles:	27,700
Estimated total unforested riparian miles:	10,300

called Stream ReLeaf, is supported by voluntary and legislative initiatives, such as the Buffer Incentive Program and Maryland's Forest Conservation Act. The Conservation Reserve Enhancement Program is also helping restore buffers by providing funds to establish up to 70,000 acres of vegetative buffers on Maryland's farmland. More important, though, streamside reforestation has been supported by the work of more than 8,000 volunteers.



Maryland's Tributary Teams have been helping reach the riparian reforestation goal. Team efforts include organizing tree plantings, assisting with outreach, and establishing tree grow-out stations to nurture seedlings for reforestation projects. This work has been pivotal to the state's riparian reforestation progress.

While Maryland has made progress in revegetating streamsides, Maryland's Biological Stream Survey estimates that approximately 40% of riparian miles are unforested, with 27% lacking any vegetated buffer. In riparian miles, this equates to more than 10,000 miles of unforested riparian corridors. (A riparian mile equals twice the distance of a stream mile; therefore, 10 stream miles equals 20 riparian miles.)

Given the importance of streamside forests and the amount of unforested riparian miles, there is still work to do. In 2003, Maryland will reevaluate the 600 mile goal. From this reevaluation, it is likely that Maryland will expand its riparian reforestation initiative to improve habitat and water quality in the Bay watershed.

The DNR Forest Service assists in the planning and implementation of riparian reforestation projects. In turn, they collect project information, such as project size and location, to track state and regional progress in reforesting riparian miles. With funding through a U.S. Forest Service grant, DNR monitors tree survival and has found that a majority of planted trees survive even through summer drought. Baseline data are also being collected to measure the effectiveness of reforested buffers in improving water quality.

To contribute information on riparian reforestation projects and plantings, organize a buffer planting, or obtain more information about Stream ReLeaf, contact Anne Hairston-Strang at 410-260-8509 or call your local DNR Forester toll free at 1-877-620-8367 (x 8531).

Team-sponsored tree grow-out stations, like this one at Bates Middle School in Annapolis, provide stock...

...for tree plantings throughout the state while educating students about the importance of riparian buffers.

Tidal Water Quality

The Tidewater Ecosystem Assessment Division of the Maryland Department of Natural Resources (DNR) coordinates, manages, and assesses data from the state's Chesapeake Bay Monitoring Program. Since 1985, this program has been monitoring the physical and chemical water quality parameters of the Chesapeake Bay mainstem and the tidal reaches of its tributaries. Currently, there are 77 monitoring stations – 55 stations in Maryland's tributaries and 22 in the Maryland portion of the Chesapeake Bay mainstem. Water quality data are collected 12 to 16 times a year, or once or twice a month, depending on the season and station. The Tidewater Ecosystem Assessment Division also manages and coordinates the collection of data on river flow, phytoplankton, zooplankton, benthos, submerged aquatic vegetation, fish populations, ecosystem processes, and light limitation.

The results from the monitoring data provide a broad-based "ground-truthing" test to determine if best management practices employed on the land are improving water quality, habitat, and submerged aquatic vegetation in the Chesapeake Bay mainstem and tidal tributaries. Long-term monitoring data are used to make management decisions and to develop and validate Chesapeake Bay models. Scientists conducting Chesapeake Bay research use the data as background information and baselines against which to compare the conditions before and after unexpected events (such as toxic outbreaks of *Pfiesteria*, oil spills, or hurricanes) and for environmental assessments of proposed projects in the Bay or its watershed.

Raw data are available on the Chesapeake Information Management System database at www.chesapeakebay.net/CIMS. In the last year, approximately 2,500 scientists/researchers, students, citizens, consultants, government workers, and consultants visited the website and downloaded water quality data.

Status and Trends

Maryland's Baywide status and trends information is based on the data collected at the 77 monitoring stations by the Tidewater Ecosystem Assessment Division. Status and trends are calculated for each of these 77 stations and for each of the 40 segments (each segment is comprised of 1 to 10 stations). The following figures provide maps of the status and trends for total nitrogen and total phosphorus for these Maryland segments.

Status

"Status" measures how current nutrient levels in each area are compared to a benchmark data set of concentrations in similar salinity zones of the Bay during the benchmark period (1985 to 1990). These are relative comparisons. Status for nitrogen and phosphorus is a relative measure because no scientifically accepted nutrient level standard has yet been established for these parameters. With the new Chesapeake 2000 Agreement, however, water quality standards will be established by 2002.

Trends

"Trends" show how the system has been changing over time, either improving, worsening, or remaining the same. For more details on the methods used to determine water quality status and trends, visit the DNR website at www.dnr.state.md.us/bay/tribstrat/status_trends_methods.html.

Tidal Nitrogen Status & Trends

Status: Total nitrogen concentrations, Figure 1, are relatively poor in the Middle Potomac River; the Back, Patapsco, and Magothy Rivers on the Western Shore; the Sassafras River and some parts of the Chester River on the Upper Eastern Shore; the Nanticoke and Wicomico Rivers on the Lower Eastern Shore; and some parts of the Choptank River. Total nitrogen concentrations are relatively fair to good in the remaining segments of the Maryland portion of the Bay. **Trends:** Total nitrogen levels have decreased (improved) in several of the Western Shore tributaries and two of the Upper Eastern Shore tributaries since 1985. Total nitrogen has significantly increased only in the Nanticoke River. No significant trends are detectable in many tributaries. Maps of status and trends for each basin are available on the Maryland Department of Natural Resources' (DNR's) website at www.dnr.state.md.us/bay/tribstrat. Select the basin of interest and then select "water quality trends."

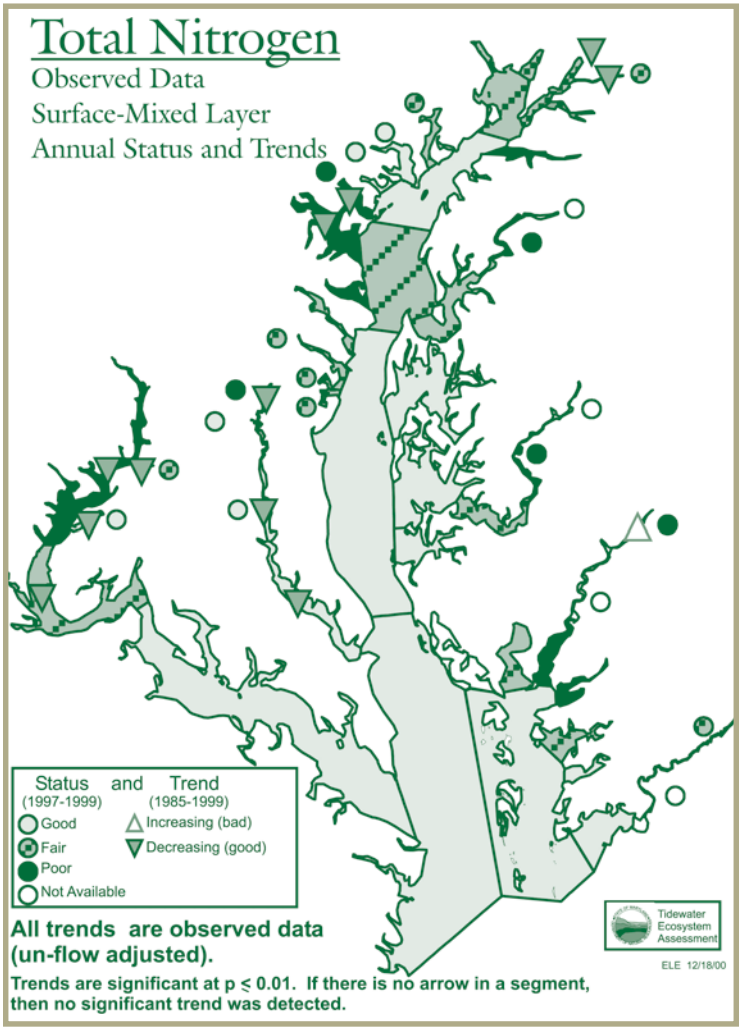


Figure 1

2000 Surface Water Salinity - Choptank River

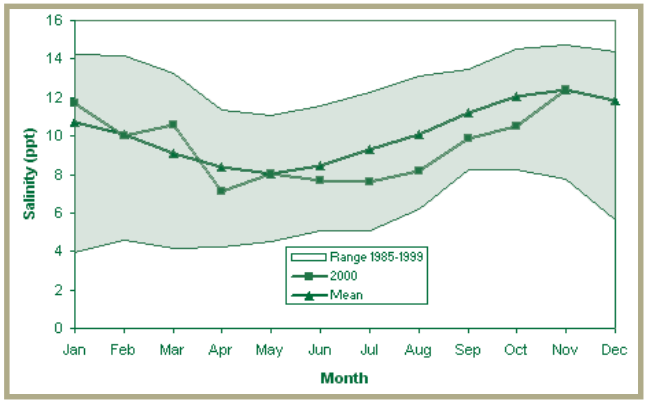


Figure 2

Graphs, such as Figure 2, of current water quality conditions are available at selected long-term monitoring (1985 to present) stations for dissolved oxygen, salinity, pH, water temperature, and water clarity (measured as Secchi depth). For each parameter, the graph shows the current year's monthly values as they compare to the average monthly value over the last 15 years (1985 to 1999). The shaded area represents the range of monthly values that have occurred from 1985 to 1999. Find these water quality conditions on the DNR website at www.dnr.state.md.us/bay/conditions/index.html.

Watershed Profiles - Patuxent River

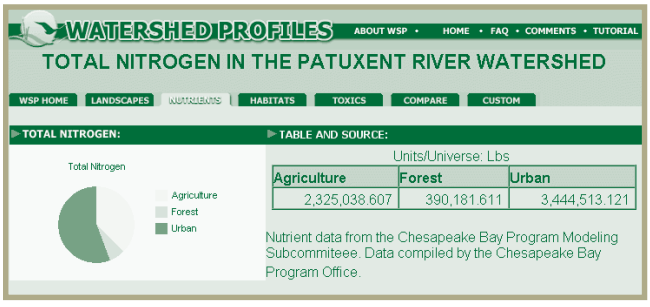


Figure 3

Watershed Profiles, Figure 3, provide environmental information for Chesapeake Bay basins, such as information on land use, nutrients, habitats, and toxic substances. The information is provided in the form of maps, charts, and text and can be obtained at various scales. For example, data can be obtained for the entire 64,000 square mile Chesapeake Bay watershed or just for the watershed of a tiny tributary. Watershed profiles are available on the Chesapeake Bay Program website at www.chesapeakebay.net/wshed.htm.

Chesapeake Bay Monitoring Program

The Chesapeake Bay Monitoring Program measures several key components of the ecosystem in addition to water quality. These include pollutant inputs, tidal habitats, and living resources. This information is vital to evaluate the progress of management actions aimed at restoring the Chesapeake Bay and its tributaries, to address emerging issues such as *Microcystis* and *Pfiesteria*, and to model the Bay ecosystem. Bay monitoring data are available at www.dnr.state.md.us/bay/monitoring/index.html.

Tidal Phosphorus Status & Trends

Status: Total phosphorus concentrations, Figure 6, are relatively poor in the upper and middle Patuxent River, Western Branch (on the Patuxent River), the Back and Patapsco Rivers on the Western Shore, and the Nanticoke and Wicomico Rivers on the Eastern Shore. Total phosphorus concentrations are relatively fair to good in the remaining segments of the Maryland portion of the Bay. **Trends:** Total phosphorus levels have decreased in many tributaries of the Bay from 1985 to 1999. Exceptions are the Bush River and Western Branch (on the Patuxent) where phosphorus levels have increased. No significant trends are detectable in many tributaries. Detailed maps of status and trends for each tributary basin are available on the Maryland Department of Natural Resources' (DNR's) website at www.dnr.state.md.us/bay/tribstrat/status_trends_methods.html. Select the basin of interest and then select "water quality trends."

Data Analysis Status & Trends Viewer

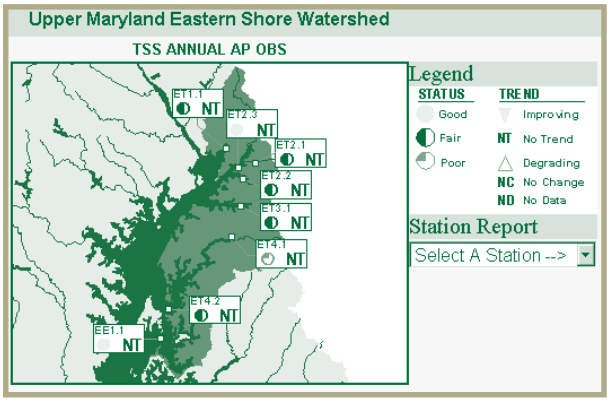


Figure 4

Detailed status and trends maps, Figure 4, are available for water quality data as well as for benthic, phytoplankton, microzooplankton, and mesozooplankton data. Maps are available for a variety of layers and seasons, for observed trends, and for flow-adjusted trends. This website is designed for scientists who are familiar with Chesapeake Bay data. It does not provide extensive background on the data or explanations of the layers, seasons, etc. This website is located at www.chesapeakebay.net/data/wqual/workshop/code2.html. Click on "Start Folder," then "1999 Status and Trends," and "S&T Viewer v2."

Dissolved Oxygen - Pocomoke River

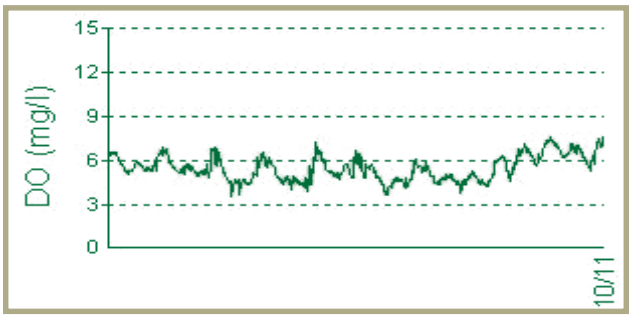


Figure 5

The Chesapeake Bay Environmental Monitoring for Public Access and Community Tracking (EMPACT) project maintains seven continuous monitoring sites: three in the Pocomoke River, one in the Chicamacomico River, one in the Transquaking River, and two in the Magothy River, Figure 5. Continuous meters were first installed at several sites in 1998. This new technology records physical parameters of water quality every 15 minutes. EMPACT data are available at www.dnr.state.md.us/bay/empact.

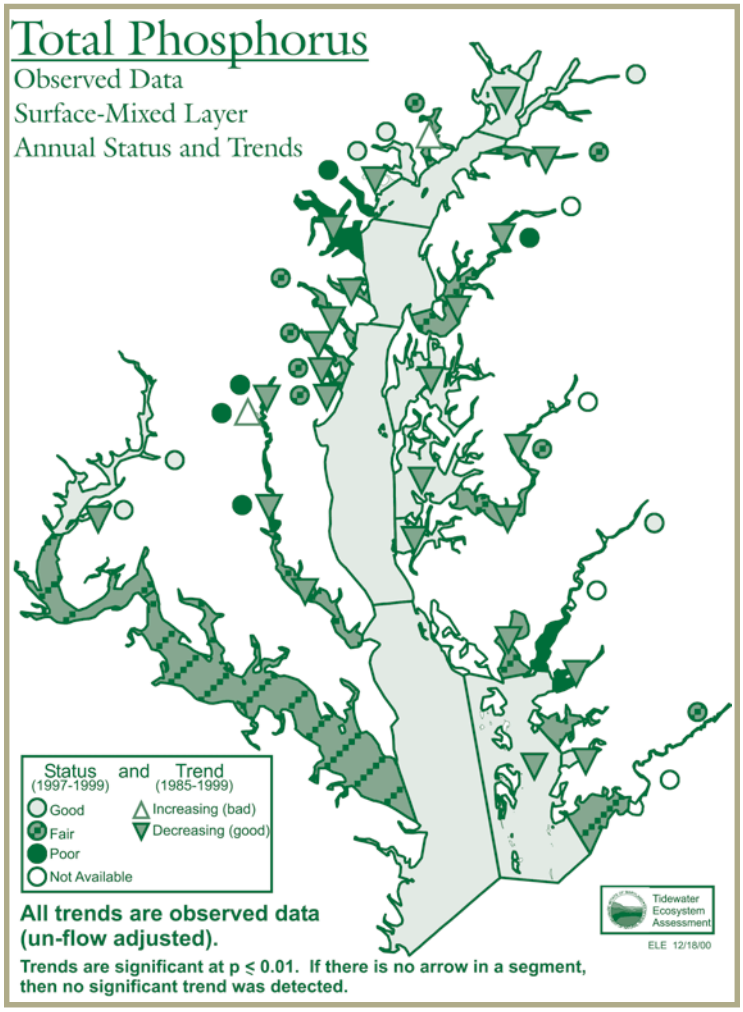


Figure 6

Interpolator

The Chesapeake Bay Interpolator calculates water quality concentrations throughout the Chesapeake Bay and its rivers from water quality concentrations measured at the 77 long-term monitoring stations. The interpolator can compute water quality concentrations at all locations in the three-dimensional water volume or as a two-dimensional layer. The interpolator's results can then be overlain with other types of data to visualize possible cause and effect relationships. The interpolator, tools, data, and products are available on the Chesapeake Bay Program website at www.chesapeakebay.net/cims/interpolator.htm.

Submerged Aquatic Vegetation

Underwater Bay grasses, also called submerged aquatic vegetation or SAV, are an essential component of the Chesapeake Bay ecosystem. They are an important indicator of Chesapeake Bay health and provide essential habitat and food for a variety of Bay creatures, including crabs, fish, and waterfowl. Bay scientists have demonstrated that young blue crabs may be up to 30 times more abundant in submerged aquatic vegetation beds then in unvegetated areas. Submerged aquatic vegetation also protects shorelines from erosion by reducing wave action, helps to absorb nutrient pollutants, produces oxygen, and traps sediments that cloud Bay waters.

Final analysis of the 2000 SAV coverage in not currently available. The analysis for 1999 data is completed, however, and shows that in 1999, Maryland SAV acreage increased by an estimated 3,463 acres since 1998 to a total of 34,011 acres – an increase of 11%. Since 1998, Baywide acreage, including Virginia waters, increased by approximately 8%. Submerged aquatic vegetation increased in the middle Bay and decreased in the upper and lower Bay. This trend reverses most of the 5,749 acre decline reported in 1998 for these same regions. In 1999, submerged aquatic vegetation increased in 25, decreased in 20, remained unvegetated in 26, and was not mapped in 7 of the 78 Chesapeake Bay Program monitoring segments. The abundance of submerged aquatic vegetation in 1999 represents a 58% achievement of the Tier I SAV restoration goal. The Chesapeake Bay Program established this goal in 1993 to restore 144,000 acres of submerged aquatic vegetation by 2005 to areas of the Bay that had grasses between 1971 and 1990.

Some of the most significant increases in submerged aquatic vegetation occurred in the Upper Eastern Shore, including the Elk and Sassafras Rivers, and in the Lower Eastern Shore, including Eastern Bay, Tangier Sound, and the Manokin, Honga and Big Annemessex Rivers. Along the Western Shore, significant increases were seen in the Middle and Lower Potomac River. Increases in submerged aquatic vegetation were also evident along the lower portions of the Maryland mainstem. It is likely that many of the increases are related to the low runoff of nutrients and sediments during the summer drought of 1999.

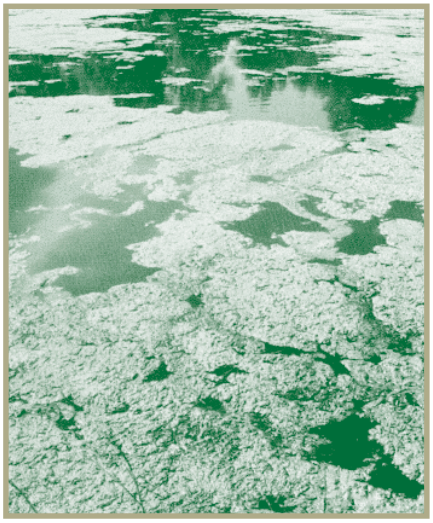
In the upper and middle Bay, declines in acreage were seen in the Bohemia River, portions of the upper Chesapeake Bay and the Gunpowder River, the lower Chester River, the mouth of the Choptank River, the South River, Piscataway Creek, and the middle Potomac River. In some of these areas, the low flows and the resulting high salinity levels may have harmed the freshwater grasses.

One of the bright spots in the 1999 survey shows a reversal in the long-term decline in submerged aquatic vegetation acreage in the Tangier Sound-Smith Island region of Maryland. This area, which held 9,143 acres in 1992, lost 7,196 acres through 1998. In 1999, submerged aquatic vegetation acreage increased 156%, or 3,033 acres. The large increase in Tangier Sound acreage is probably a result of improved water quality due to the low flows of last year.

Tom Parham, DNR biologist, helps Milford Mill High School students plant underwater grasses to help restore their watershed.

Harmful Algal Blooms

Harmful algal blooms are unusually large concentrations of single-celled phytoplankton that can cause negative impacts to the environment and, sometimes, to humans. Most phytoplankton in the Chesapeake Bay serves an important ecological role as the basis of the food chain. Harmful algal bloom species, however, have the ability to cause damage to Bay grasses, shellfish, fish, and humans as a result of their extremely dense concentrations. In such concentrations, they replace valuable species in the food chain, block sunlight, deplete oxygen, and, in some cases, produce toxins. Sometimes harmful algal blooms may become dense enough to visibly change the color of the water and are referred to as red, mahogany, or brown tides.

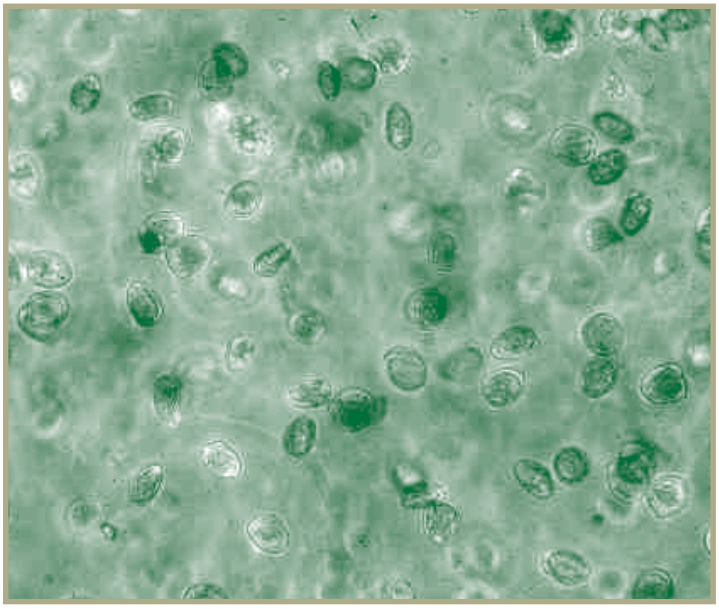


Harmful algal bloom species represent a wide range of organisms that preferentially grow under different environmental conditions. *Microcystis*, for example, grows best at low salinities and warm temperatures, whereas *Prorocentrum* grows best at higher salinities and cooler temperatures. A common denominator encouraging the growth of many harmful algal blooms, however, is nutrient enrichment. Most harmful algal bloom species utilize nutrients (nitrogen and phosphorus) either directly or indirectly. Blooms, therefore, are frequently associated with nutrient enriched waters. Reducing the nutrient concentrations in the Chesapeake Bay is likely the most practical means of reducing the likelihood and severity of future harmful algal bloom outbreaks.

Until recently, Maryland has not had the severity of harmful algal bloom outbreaks that have occurred in other parts of the nation and world. Our awareness of these events in Maryland is increasing, however, due to several types of harmful algal bloom outbreaks that have happened over the last few years. Maryland Department of Natural Resources (DNR) has comprehensive, ongoing monitoring programs to identify and track harmful algal bloom outbreaks should they occur. In many cases, additional sampling is needed during outbreaks to assess the extent and possible toxicity of these blooms. If these investigations suggest that public health may be at risk, DNR works closely with the Maryland Department of the Environment and the Maryland Department of Health and Mental Hygiene to collect and interpret the information necessary to protect the safety of seafood and individuals involved in contact recreation.

During 2000, DNR documented the presence of the following harmful algal bloom species in Maryland's portion of the Chesapeake Bay.

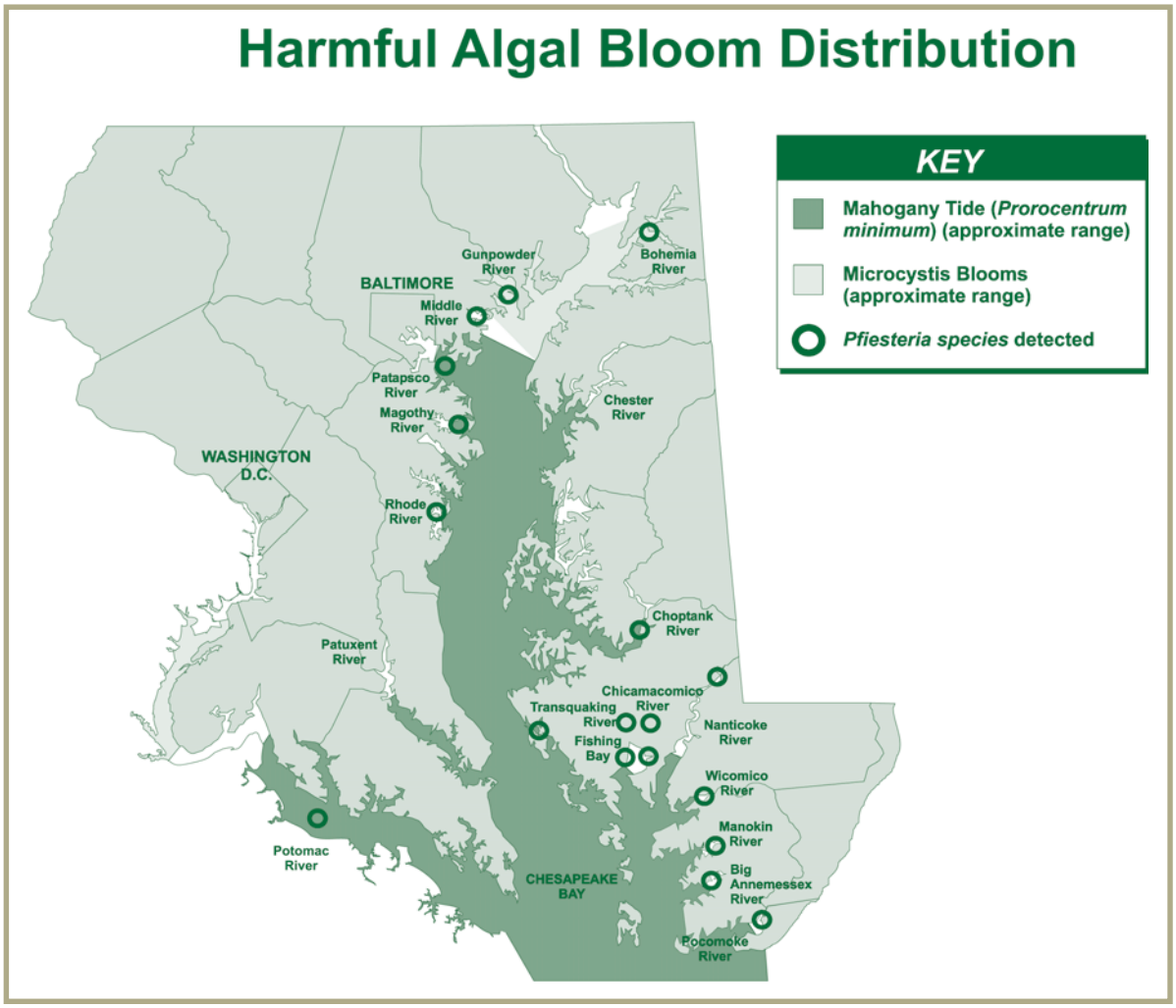
Prorocentrum minimum is an algal species that occurs naturally in the Chesapeake Bay, typically in areas of moderate salinity. Dense blooms of *Prorocentrum* are sometimes referred to as "mahogany tides" due to the color they make the water. It is not unusual to observe blooms of *Prorocentrum* in the spring, but the blooms observed during April and May 2000 were among the most concentrated and extensive in 20 years. Several fish kills in the Potomac River this year (Breton and St. Clement Bays) are believed to be due to low dissolved oxygen resulting from these blooms. Although there is some laboratory evidence that *Prorocentrum* produces toxins, no toxic effects of this species have ever been observed in the Chesapeake Bay.



Prorocentrum minimum is a common dinoflagellate of the Bay. To date, it is non-toxic in the Bay but has been responsible for fish kills in other parts of the world. (Rhode River, April 2000. Photographed by Sharyn Hedrick, Smithsonian Environmental Research Center.)

Microcystis aeruginosa is a species of blue-green algae frequently observed in freshwater ponds and the lower salinity portions of the Chesapeake Bay. Individual cells of this species frequently join together in larger groups, or colonies, sometimes forming noticeable bright green algal mats. Blooms usually occur during the warmest months of the year. Heavy blooms of this species occurred on the tidal freshwater portions of the Potomac River during the 1970's and early 1980's, and smaller blooms have been observed frequently since then. During 2000, unusually heavy blooms were observed in the upper Chesapeake Bay and tributaries. In addition to reducing dissolved oxygen concentrations to levels potentially lethal to fish, *Microcystis* may also produce toxins that have resulted in animal and human health problems elsewhere in the nation. Tests of the 2000 blooms in the upper Chesapeake Bay revealed that the toxin was present and resulted in the temporary closure of several Kent County beaches.

***Pfiesteria* species** are toxin-producing dinoflagellates that resulted in fish kills and were linked to human health impacts during outbreaks on three Lower Eastern Shore rivers in 1997. Unlike many of the other harmful algal bloom species, *Pfiesteria* may have negative impacts at relatively low densities and not cause a visible discoloration of the water. Since 1997, Maryland has been intensively monitoring fish health and *Pfiesteria* presence. *Pfiesteria* appears to be widespread throughout many Chesapeake Bay tributaries. Although fish health continues to be investigated and *Pfiesteria* has been present as of December 2000, there has been no evidence of a toxic outbreak since 1997.



Watershed Modeling Data

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in Maryland dropped from 82.5 million pounds in 1985 to 59.0 million pounds in 2000 – a 28% reduction. Total phosphorus loads in Maryland dropped from 6.78 million pounds in 1985 to 4.11 million pounds in 2000 – a 39% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim nutrient goal is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. Maryland fell short of the interim goal for nitrogen by 2.41 million pounds/year but exceeded the interim goal for phosphorus by 0.15 million pounds/year.

- **Point Sources:** Statewide, Maryland point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. This decline occurred despite increased flow rates. In Maryland, average annual point source nitrogen loads decreased from 31.38 million pounds to 16.97 million pounds (-46%), and average annual point source phosphorus loads dropped from 2.38 million pounds to 0.96 million pounds (-59%).

- **Agriculture:** Statewide, from 1985 to 2000, Maryland agricultural loads declined due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Maryland basin, nitrogen from agriculture dropped from 32.2 million pounds to 21.1 million pounds (-34%), and phosphorus decreased from 2.74 million pounds to 1.52 million pounds (-45%). In Maryland, agricultural land decreased by 13%, from an estimated 1,846,000 acres in 1985 to 1,622,800 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 15% less nitrogen and 11% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, Maryland urban loads grew, even with the implementation of urban best management practices. Statewide, urban acres grew 22%, from 844,300 acres in 1985 to 1,045,500 acres in 2000. Urban nitrogen loads increased 19%, from 11.81 million pounds to 14.05 million pounds, and urban phosphorus loads increased 16%, from 1.15 million pounds to 1.34 million pounds.

How are the loads projected to change by 2005?

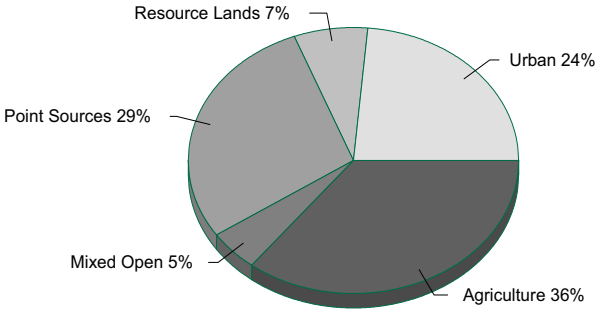
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In Maryland, the Chesapeake Bay Program projects that nitrogen loads will increase by 0.36 million pounds, or 0.60%, and phosphorus loads will grow by 0.07 million pounds, or 1.60%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

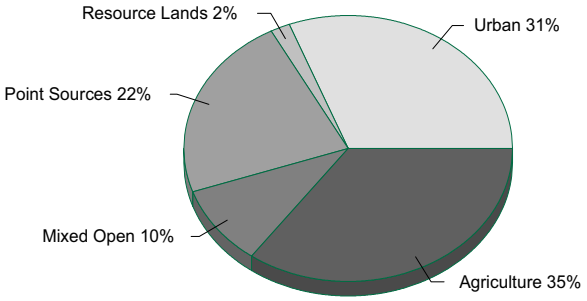
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Maryland basin through 2005, reducing an estimated 3.86 million pounds of nitrogen and 0.17 million pounds of phosphorus. With these additional reductions, the Maryland basin will meet its interim nitrogen and phosphorus goals by 2005.

Maryland

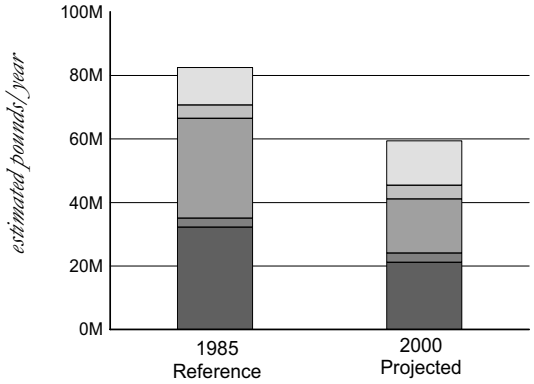
Total Nitrogen by Source, 2000



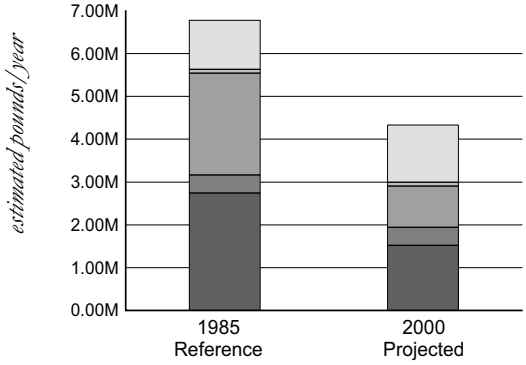
Total Phosphorus by Source, 2000



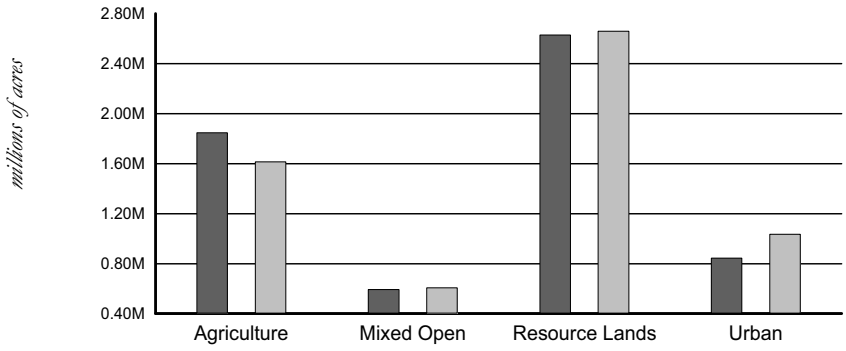
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Choptank River

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Choptank River basin dropped from 6.2 million pounds in 1985 to 4.1 million pounds in 2000 – a 34% reduction. Total phosphorus loads in the Choptank River basin dropped from 0.64 million pounds in 1985 to 0.37 million pounds in 2000 – a 42% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Choptank River basin fell short of the interim goal for nitrogen by 0.04 million pounds/year and exceeded the interim goal for phosphorus by 0.04 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Choptank River basin, average annual point source nitrogen loads decreased from 0.24 million pounds to 0.23 million pounds (-4%), and phosphorus loads dropped from 0.09 million pounds to 0.07 million pounds (-29%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads decreased due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Choptank River basin, nitrogen from agriculture dropped from 5.0 million pounds to 3.0 million pounds (-42%), and phosphorus decreased from 0.46 million pounds to 0.23 million pounds (-49%). Agricultural land decreased by 9%, from an estimated 221,700 acres in 1985 to 202,300 acres in 2000. Farm animal production also declined from 1982 to 1997 but generated 4% more nitrogen and 4% more phosphorus in the Choptank River basin.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Choptank River basin, urban acres increased 15%, from 22,700 acres in 1985 to 26,100 acres in 2000. Urban nitrogen loads grew 12%, from 0.35 million pounds to 0.39 million pounds, and phosphorus loads increased 11%, from 0.04 million pounds to 0.04 million pounds.

How are the loads projected to change by 2005?

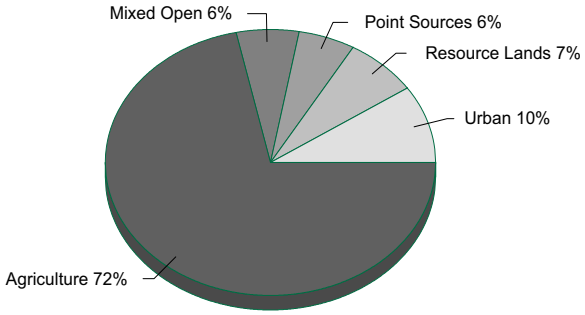
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Choptank River basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.03 million pounds, or 0.80%, and phosphorus loads will grow by 0.01 million pounds, or 1.30%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

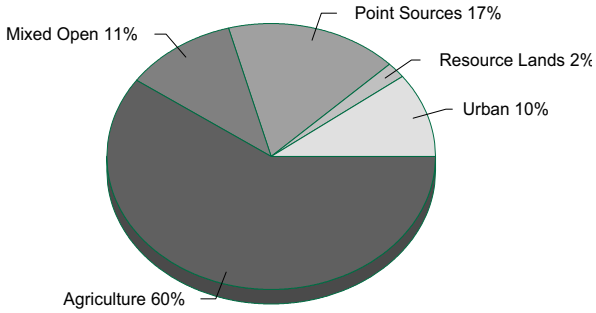
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Choptank River basin through 2005, reducing an estimated 0.32 million pounds of nitrogen and 0.03 million pounds of phosphorus. With these additional reductions, the Choptank River basin will meet its interim nitrogen and phosphorus goals by 2005.

Choptank

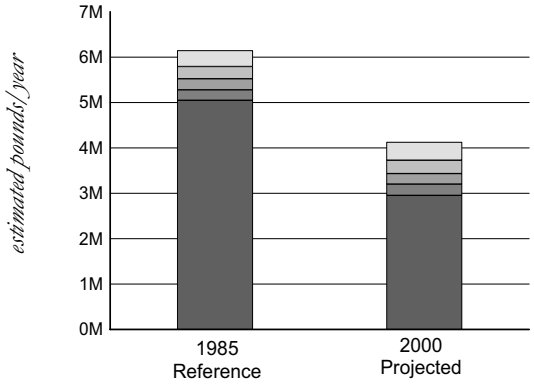
Total Nitrogen by Source, 2000



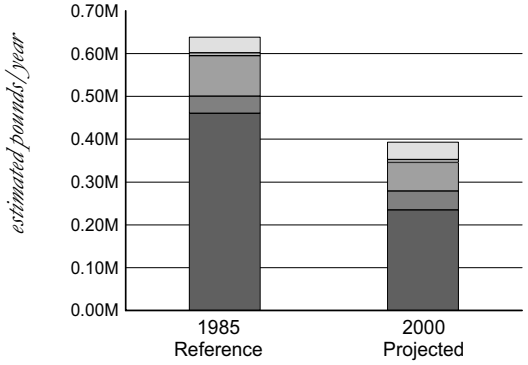
Total Phosphorus by Source, 2000



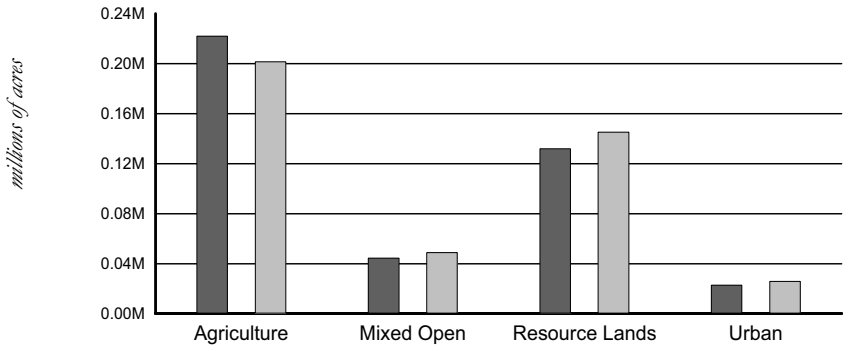
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Lower Eastern Shore

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Lower Eastern Shore basin dropped from 9.5 million pounds in 1985 to 7.1 million pounds in 2000 – a 25% reduction. Total phosphorus loads in the Lower Eastern Shore basin dropped from 1.10 million pounds in 1985 to 0.57 million pounds in 2000 – a 48% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Lower Eastern Shore basin fell short of the interim nitrogen goal by 0.41 million pounds/year and just met the interim phosphorus goal.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Lower Eastern Shore basin, average annual point source nitrogen loads have increased from 0.42 million pounds to 0.68 million pounds (61%), and average annual point source phosphorus loads have decreased from 0.15 million pounds to 0.07 million pounds (-55%).

- **Agriculture:** Statewide, between 1985 and 2000, agricultural loads dropped due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Lower Eastern Shore basin, nitrogen from agriculture dropped from 6.9 million pounds to 4.2 million pounds (-39%), and phosphorus dropped from 0.76 million pounds to 0.31 million pounds (-59%). Agricultural land decreased by 7%, from an estimated 267,000 acres in 1985 to 251,500 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 10% less nitrogen and 11% less phosphorus.

- **Urban:** Conversely, between 1985 and 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Lower Eastern Shore basin, urban acres grew 18%, from 38,600 acres in 1985 to 45,900 acres in 2000. Urban nitrogen loads increased 14%, from 0.64 million pounds to 0.73 million pounds, and urban phosphorus loads increased 11%, from 0.06 million pounds to 0.07 million pounds.

How are the loads projected to change by 2005?

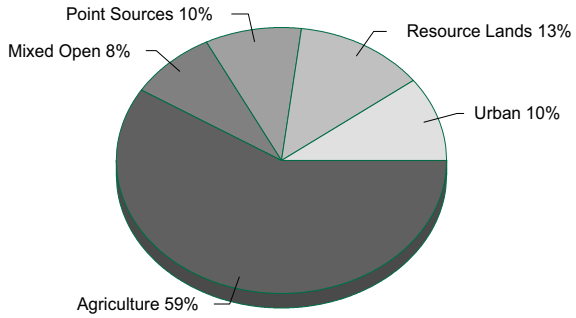
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Lower Eastern Shore basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.05 million pounds, or 0.70%, and phosphorus loads will grow by 0.01 million pounds, or 0.90%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

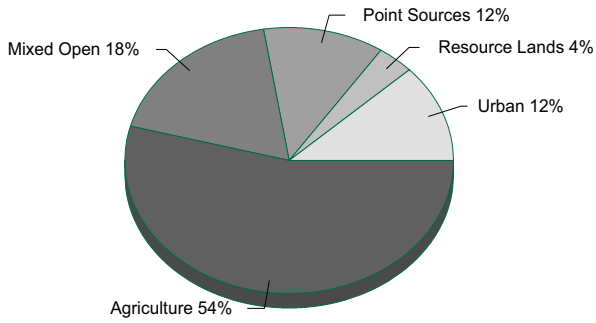
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Lower Eastern Shore basin through 2005, reducing an estimated 0.54 million pounds of nitrogen and 0.02 million pounds of phosphorus. With these additional reductions, the Lower Eastern Shore basin will meet its interim nitrogen and phosphorus goals by 2005.

Lower Eastern Shor

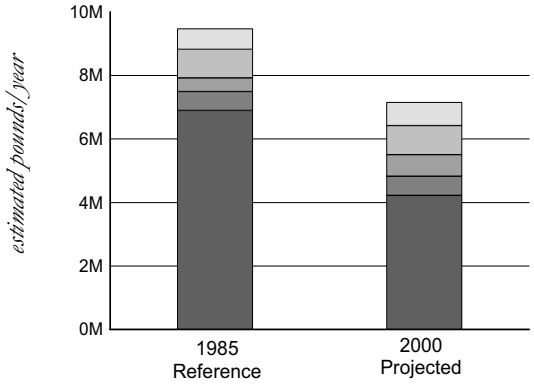
Total Nitrogen by Source, 2000



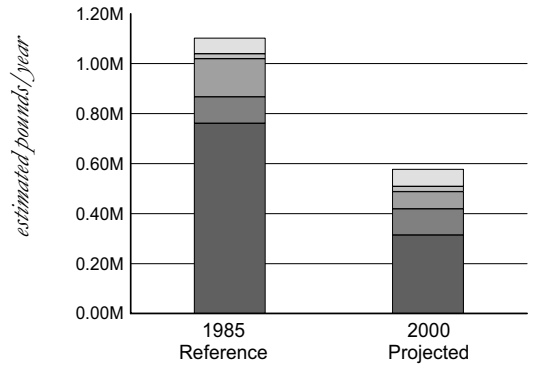
Total Phosphorus by Source, 2000



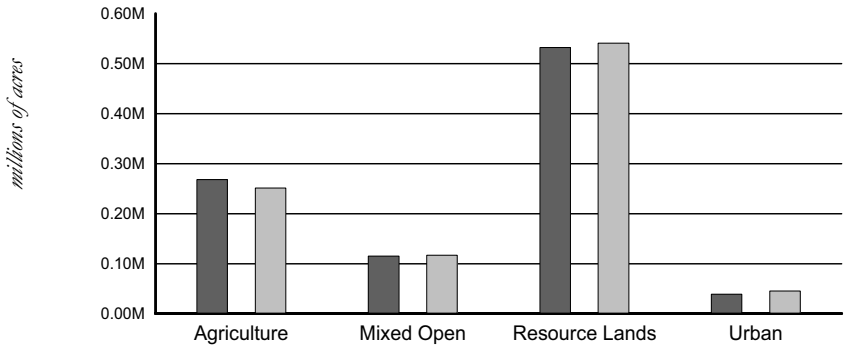
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Lower Potomac

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Lower Potomac basin dropped from 3.4 million pounds in 1985 to 3.1 million pounds in 2000 – a 7% reduction. Total phosphorus loads in the Lower Potomac basin dropped from 0.32 million pounds in 1985 to 0.22 million pounds in 2000 – a 31% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Lower Potomac basin fell short of the interim nitrogen goal by 0.33 million pounds/year and just met the interim phosphorus goal.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Lower Potomac basin, average annual point source nitrogen loads decreased from 0.55 million pounds to 0.40 million pounds (-28%), and average annual point source phosphorus loads dropped from 0.10 million pounds to 0.03 million pounds (-66%).

- **Agriculture:** Statewide, between 1985 and 2000, agricultural loads dropped due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Lower Potomac basin, nitrogen from agriculture dropped from 1.4 million pounds to 1.1 million pounds (-25%), and phosphorus decreased from 0.12 million pounds to 0.07 million pounds (-42%). Agricultural land decreased by 24%, from an estimated 89,900 acres in 1985 to 70,800 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 27% less nitrogen and 26% less phosphorus.

- **Urban:** Conversely, between 1985 and 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Lower Potomac basin, urban acres grew 37%, from 65,300 acres in 1985 to 93,000 acres in 2000. Urban nitrogen loads grew 37%, from 0.81 million pounds to 1.10 million pounds, and urban phosphorus loads grew 33%, from 0.08 million pounds to 0.10 million pounds.

How are the loads projected to change by 2005?

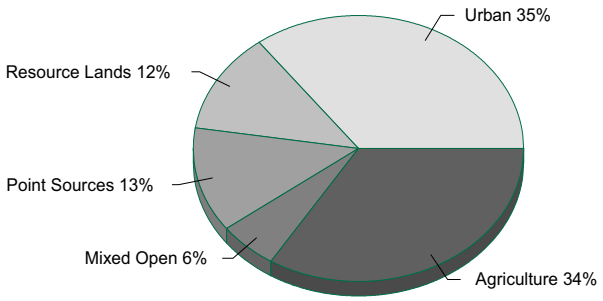
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Lower Potomac basin, the Chesapeake Bay Program projects that nitrogen loads will drop by 0.03 million pounds, or -1.00%, and phosphorus loads will grow slightly, by 0.50%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

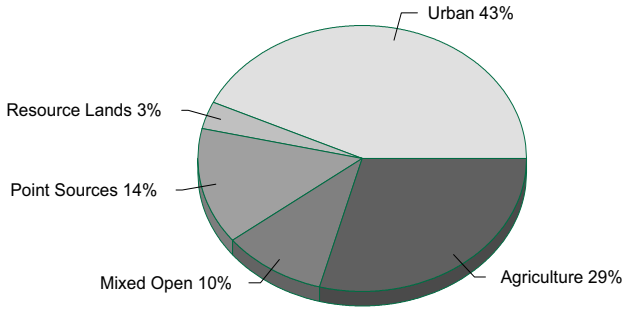
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Lower Potomac basin through 2005, reducing an estimated 0.09 million pounds of nitrogen. Phosphorus will not be reduced appreciably. With these additional reductions, the Lower Potomac basin will not meet its interim nitrogen goal by 2005 and will almost meet its interim phosphorus goal.

Lower Potoma

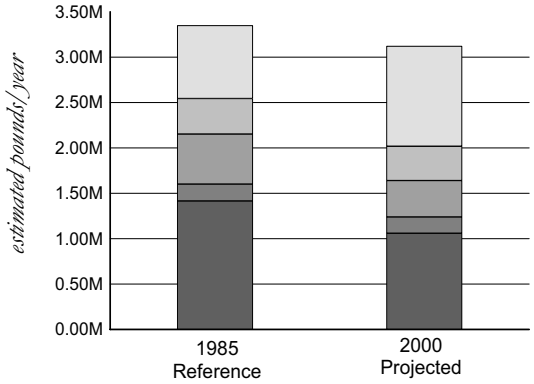
Total Nitrogen by Source, 2000



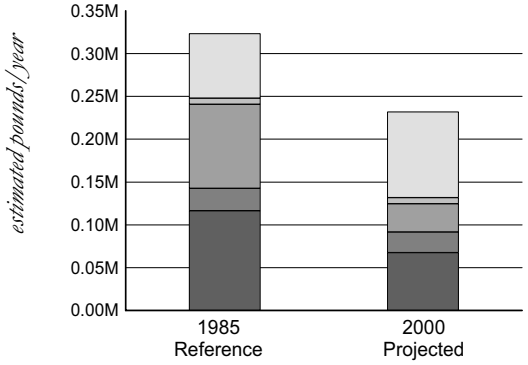
Total Phosphorus by Source, 2000



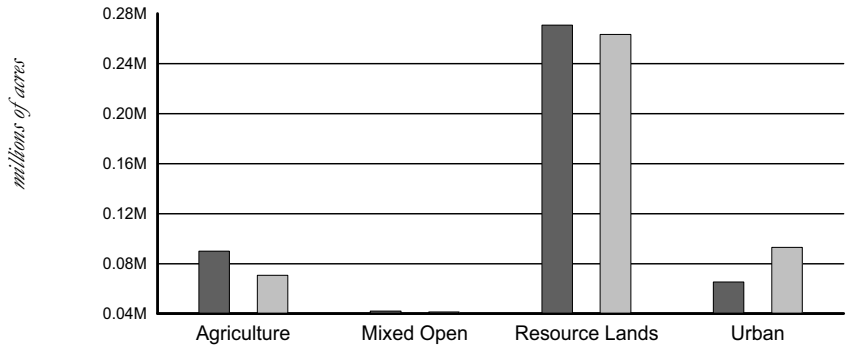
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Lower Western Shore

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Lower Western Shore basin dropped from 2.0 million pounds in 1985 to 1.8 million pounds in 2000 – a 12% reduction. Total phosphorus loads in the Lower Western Shore basin dropped from 0.26 million pounds in 1985 to 0.12 million pounds in 2000 – a 54% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Lower Western Shore basin exceeded the interim nitrogen goal by 0.05 million pounds/year and exceeded the interim phosphorus goal by 0.02 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Lower Western Shore basin, average annual point source nitrogen loads have decreased from 0.56 million pounds to 0.30 million pounds (-47%), and average annual point source phosphorus loads declined from 0.14 million pounds to 0.03 million pounds (-78%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads declined due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Lower Western Shore basin, nitrogen from agriculture dropped from 0.3 million pounds to 0.2 million pounds (-41%), and phosphorus dropped from 0.02 million pounds to 0.01 million pounds (-44%). Agricultural land decreased by 29%, from an estimated 16,700 acres in 1985 to 12,100 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 49% less nitrogen and 51% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Lower Western Shore basin, urban acres grew 25%, from 57,500 acres in 1985 to 72,700 acres in 2000. Urban nitrogen loads grew 22%, from 0.99 million pounds to 1.21 million pounds, and urban phosphorus loads increased 20%, from 0.09 million pounds to 0.10 million pounds.

How are the loads projected to change by 2005?

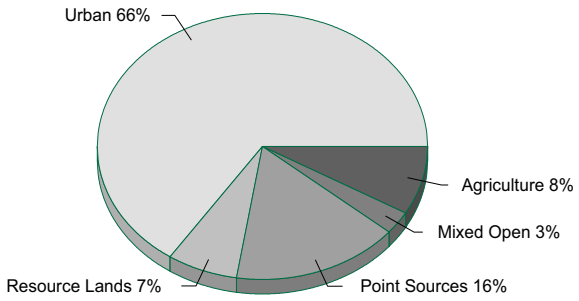
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Lower Western Shore basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.06 million pounds, or 3.50%, and phosphorus loads will grow by 0.01 million pounds, or 5.20%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

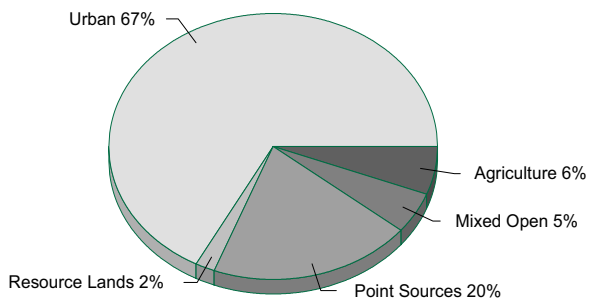
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Lower Western Shore basin through 2005, reducing an estimated 0.03 million pounds of nitrogen and 0.02 million pounds of phosphorus. With these additional reductions, the Lower Western Shore basin will not meet its interim nitrogen goal by 2005 but will meet its interim phosphorus goal.

Lower Western Shor

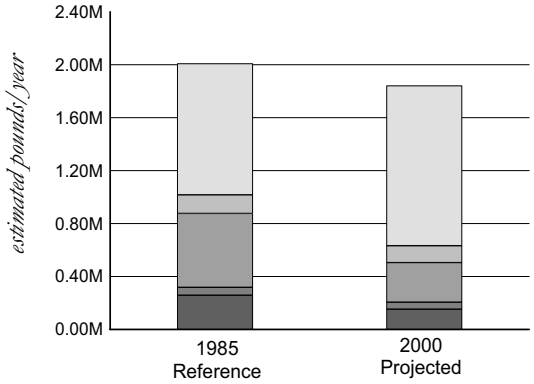
Total Nitrogen by Source, 2000



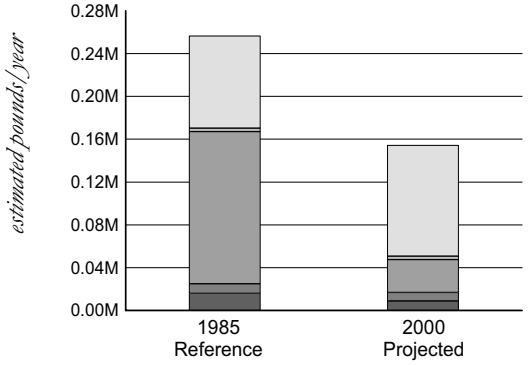
Total Phosphorus by Source, 2000



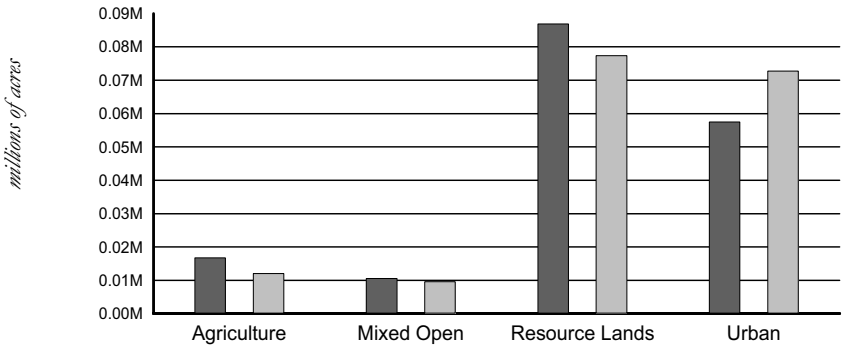
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Middle Potomac

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Middle Potomac basin dropped from 10.4 million pounds in 1985 to 7.3 million pounds in 2000 – a 30% reduction. Total phosphorus loads in the Middle Potomac basin dropped from 0.46 million pounds in 1985 to 0.43 million pounds in 2000 – a 7% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Middle Potomac basin exceeded the interim nitrogen goal by 0.40 million pounds/year and just met the interim phosphorus goal.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Middle Potomac basin, average annual point source nitrogen loads dropped from 6.63 million pounds to 3.63 million pounds (-45%), and phosphorus loads decreased from 0.08 million pounds to 0.07 million pounds (-18%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads decreased due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Middle Potomac basin, nitrogen from agriculture dropped from 1.2 million pounds to 0.8 million pounds (-34%), and phosphorus dropped from 0.09 million pounds to 0.05 million pounds (-46%). Agricultural land decreased by 28%, from an estimated 74,500 acres in 1985 to 55,600 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 54% less nitrogen and 50% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Middle Potomac basin, urban acres grew 20%, from 168,700 acres in 1985 to 206,800 acres in 2000. Urban nitrogen loads grew 16%, from 2.14 million pounds to 2.48 million pounds, and phosphorus loads increased 15%, from 0.25 million pounds to 0.29 million pounds.

How are the loads projected to change by 2005?

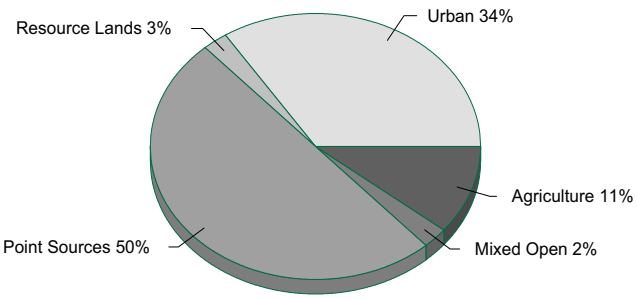
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Middle Potomac basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.59 million pounds, or 8.10%, and phosphorus loads will grow by 0.02 million pounds, or 3.60%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

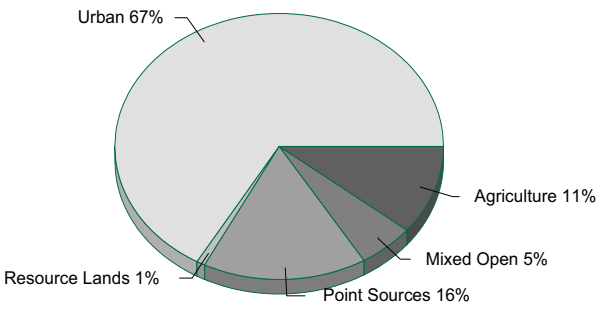
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Middle Potomac basin through 2005, reducing an estimated 0.54 million pounds of nitrogen and 0.01 million pounds of phosphorus. With these additional reductions, the Middle Potomac basin will meet its interim nitrogen goal and will almost meet its interim phosphorus goal by 2005.

Middle Potoma

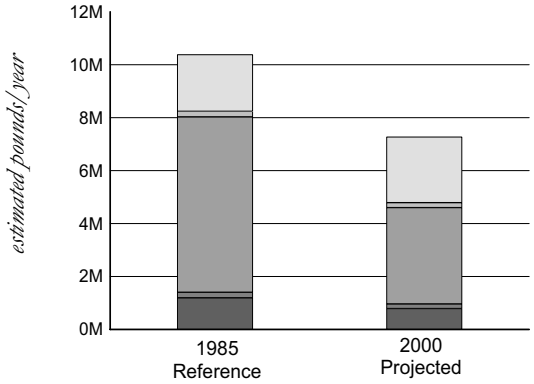
Total Nitrogen by Source, 2000



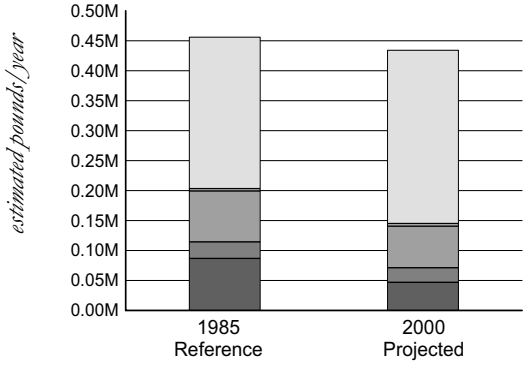
Total Phosphorus by Source, 2000



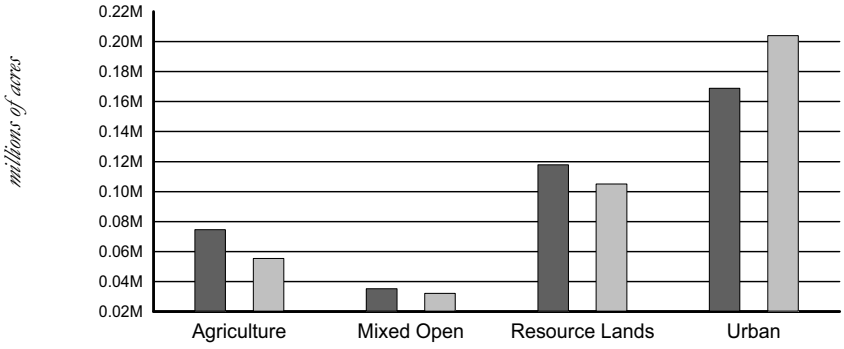
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Patapsco/Back Rivers

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Patapsco/Back River basin dropped from 22.4 million pounds in 1985 to 12.1 million pounds in 2000 – a 46% reduction. Total phosphorus loads in the Patapsco/Back River basin dropped from 1.39 million pounds in 1985 to 0.69 million pounds in 2000 – a 50% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Patapsco/Back River basin fell short of the interim nitrogen goal by 1.55 million pounds/year and fell short of the interim phosphorus goal by 0.01 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Patapsco/Back River basin, average annual point source nitrogen loads declined from 19.09 million pounds to 8.82 million pounds (-54%), and average annual point source phosphorus loads decreased from 1.02 million pounds to 0.32 million pounds (-69%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads declined due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Patapsco/Back River basin, nitrogen from agriculture dropped from 0.6 million pounds to 0.4 million pounds (-35%), and phosphorus dropped from 0.04 million pounds to 0.02 million pounds (-41%). Agricultural land decreased by 16%, from an estimated 82,600 acres in 1985 to 70,400 acres in 2000. Farm animal production also declined from 1982 to 1997, generating 29% less nitrogen and 28% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Patapsco/Back River basin, urban acres grew 10%, from 170,400 acres in 1985 to 188,200 acres in 2000. Urban nitrogen loads grew 7%, from 2.52 million pounds to 2.70 million pounds, and phosphorus loads grew 7%, from 0.30 million pounds to 0.33 million pounds.

How are the loads projected to change by 2005?

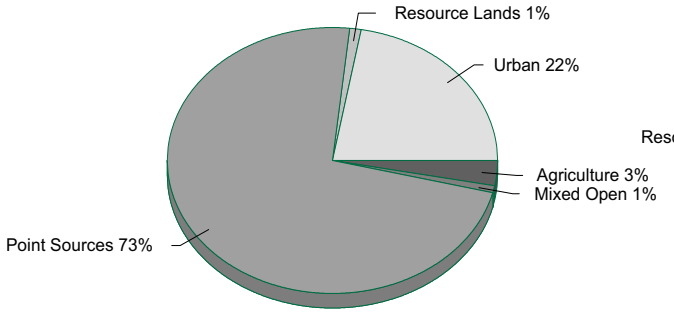
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Patapsco/Back River basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.07 million pounds, or 0.50%, and phosphorus loads will grow by 0.01 million pounds, or 1.20%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

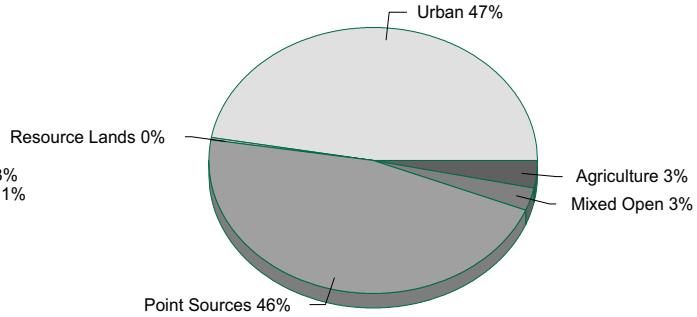
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Patapsco/Back River basin through 2005, reducing an estimated 0.54 million pounds of nitrogen and 0.01 million pounds of phosphorus. With these additional reductions, the Patapsco/Back River basin will not meet its interim nitrogen goal and will almost meet its interim phosphorus goal by 2005.

Patapsco/Back Rive

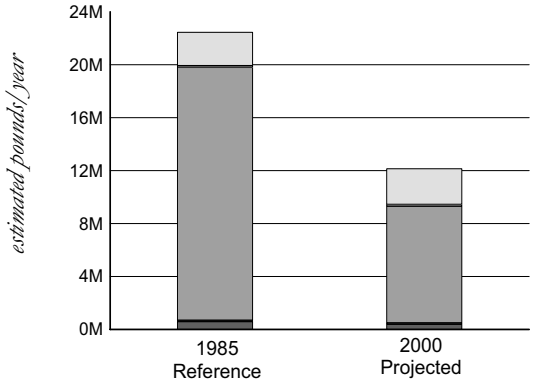
Total Nitrogen by Source, 2000



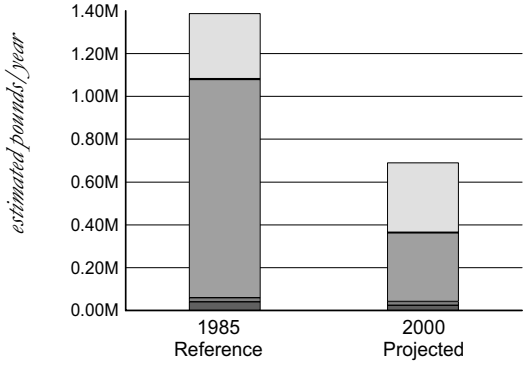
Total Phosphorus by Source, 2000



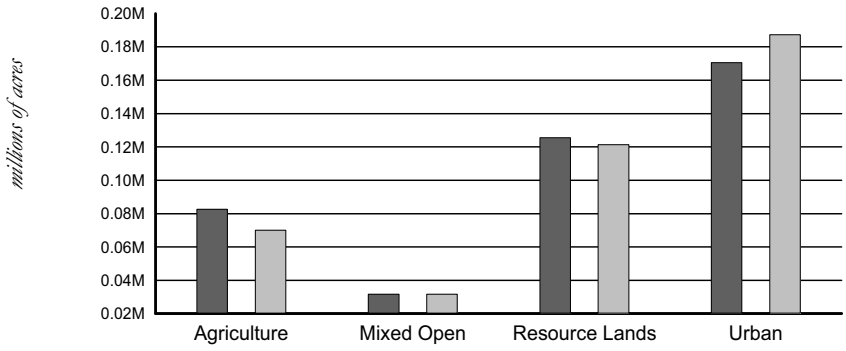
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Patuxent River

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Patuxent River basin dropped from 5.0 million pounds in 1985 to 4.3 million pounds in 2000 – a 15% reduction. Total phosphorus loads in the Patuxent River basin dropped from 0.51 million pounds in 1985 to 0.31 million pounds in 2000 – a 39% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Patuxent River exceeded the interim nitrogen goal by 0.08 million pounds/year and exceeded the interim phosphorus goal by 0.01 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Patuxent River basin, average annual point source nitrogen loads declined from 1.53 million pounds to 0.98 million pounds (-36%), and average annual point source phosphorus loads decreased from 0.26 million pounds to 0.09 million pounds (-64%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads decreased due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Patuxent River basin, nitrogen from agriculture dropped from 1.5 million pounds to 0.9 million pounds (-42%), and phosphorus decreased from 0.11 million pounds to 0.06 million pounds (-44%). Agricultural land has decreased by 33%, from an estimated 130,500 acres in 1985 to 91,000 acres in 2000. Farm animal production has also declined from 1982 to 1997, generating 46% less nitrogen and 44% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Patuxent River basin, urban acres grew 32%, from 126,400 acres in 1985 to 172,300 acres in 2000. Urban nitrogen loads grew 33%, from 1.43 million pounds to 1.89 million pounds, and urban phosphorus loads grew 30%, from 0.11 million pounds to 0.14 million pounds.

How are the loads projected to change by 2005?

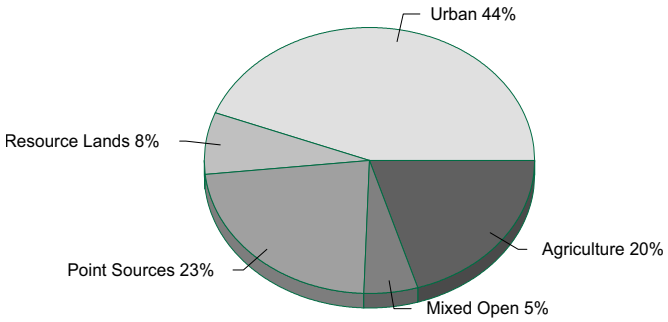
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Patuxent River basin, the Chesapeake Bay Program projects that nitrogen loads will drop by 0.09 million pounds, or 2.10%, and phosphorus loads will grow by 0.01 million pounds, or 3.40%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

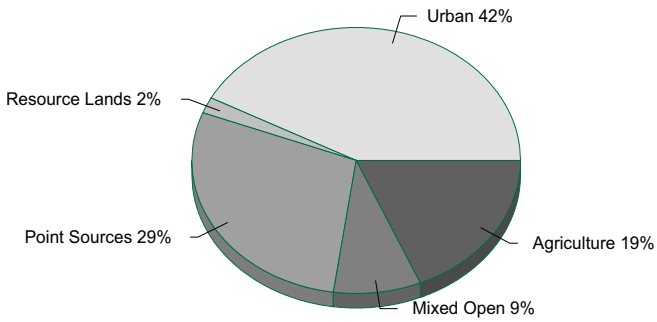
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Patuxent River basin through 2005, reducing an estimated 0.37 million pounds of nitrogen. Phosphorus will not be reduced appreciably. Even with these additional nutrient reduction measures, however, the Patuxent River basin is not expected to meet its interim nitrogen goal by 2005 but is expected to meet its interim phosphorus goal.

Patuxent

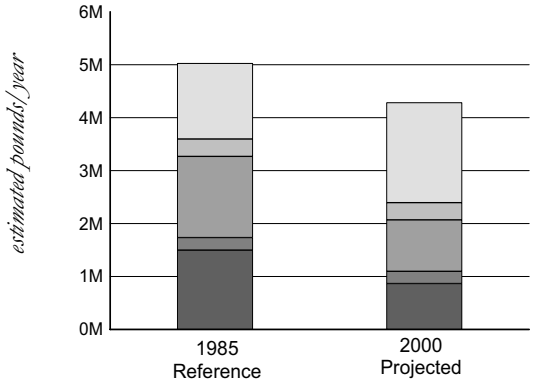
Total Nitrogen by Source, 2000



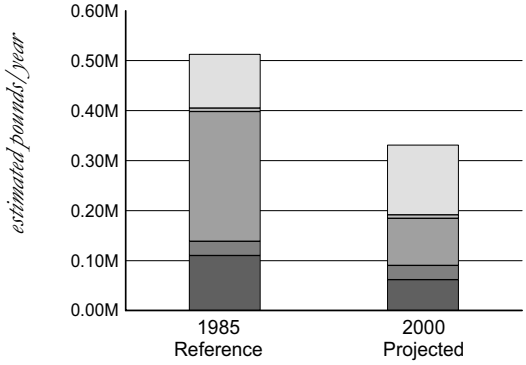
Total Phosphorus by Source, 2000



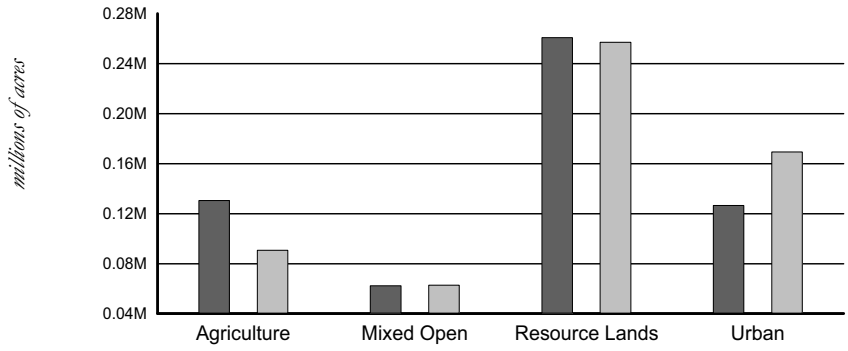
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Upper Eastern Shore

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Upper Eastern Shore basin dropped from 8.1 million pounds in 1985 to 6.2 million pounds in 2000 – a 24% reduction. Total phosphorus loads in the Upper Eastern Shore basin dropped from 0.69 million pounds in 1985 to 0.38 million pounds in 2000 – a 45% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Upper Eastern Shore fell short of the interim nitrogen goal by 0.10 million pounds/year and exceeded the interim phosphorus goal by 0.11 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Upper Eastern Shore basin, average annual point source nitrogen loads increased from 0.22 million pounds to 0.30 million pounds (37%), and average annual point source phosphorus loads decreased from 0.05 million pounds to 0.03 million pounds (-40%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads declined due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Upper Eastern Shore basin, nitrogen from agriculture dropped from 6.6 million pounds to 4.6 million pounds (-29%), and phosphorus dropped from 0.51 million pounds to 0.34 million pounds (-35%). Agricultural land decreased by 6%, from an estimated 316,200 acres in 1985 to 297,600 acres in 2000. Farm animal production decreased from 1982 to 1997 but generated 11% more nitrogen and 25% more phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Upper Eastern Shore basin, urban acres grew 26%, from 34,500 acres in 1985 to 44,200 acres in 2000. Urban nitrogen loads grew 21%, from 0.62 million pounds to 0.75 million pounds, and urban phosphorus loads grew 20%, from 0.06 million pounds to 0.07 million pounds.

How are the loads projected to change by 2005?

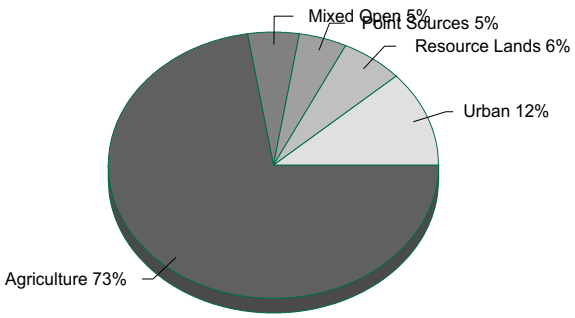
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Upper Eastern Shore basin, the Chesapeake Bay Program projects that nitrogen loads will grow by 0.08 million pounds, or 1.30%, and phosphorus loads will grow by 0.01 million pounds, or 2.10%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

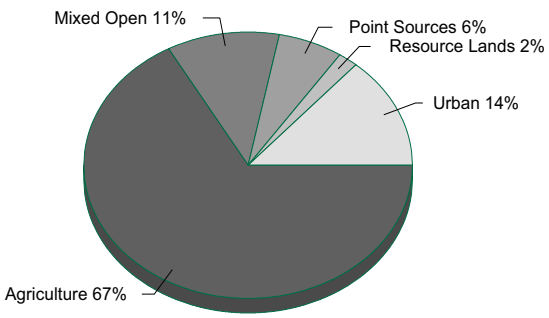
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Upper Eastern Shore basin through 2005, reducing an estimated 0.88 million pounds of nitrogen and 0.07 million pounds of phosphorus. With these additional reductions, the Upper Eastern Shore basin will meet its interim nitrogen and phosphorus goals by 2005.

Upper Eastern Shor

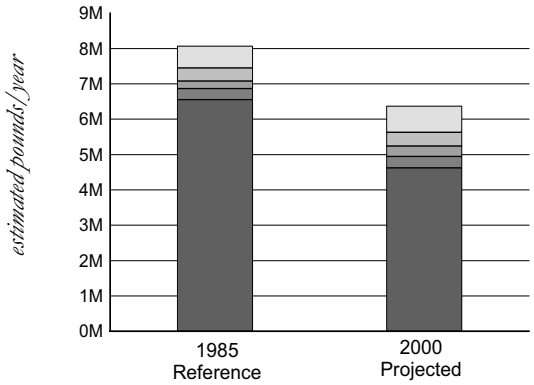
Total Nitrogen by Source, 2000



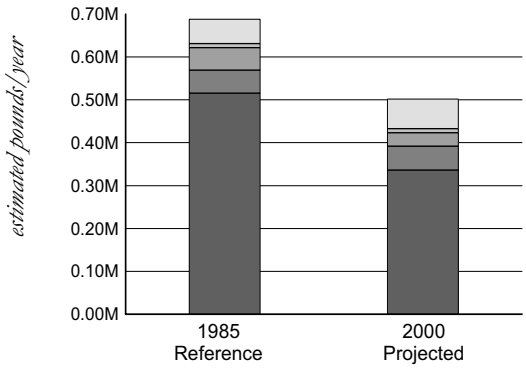
Total Phosphorus by Source, 2000



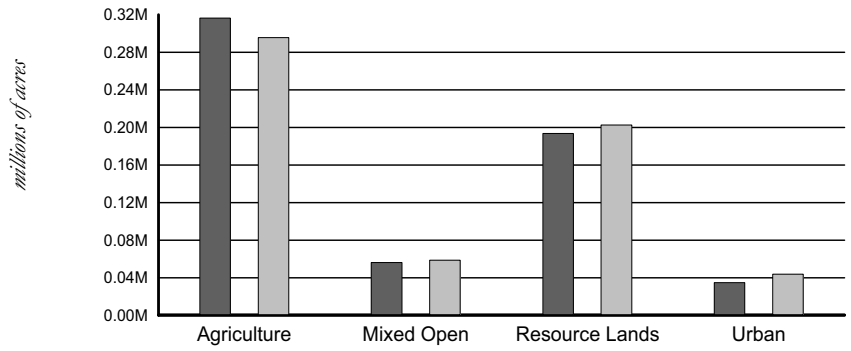
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Upper Potomac

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Upper Potomac basin dropped from 10.2 million pounds in 1985 to 8.6 million pounds in 2000 – a 16% reduction. Total phosphorus loads in the Upper Potomac basin dropped from 1.02 million pounds in 1985 to 0.70 million pounds in 2000 – a 31% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Upper Potomac fell short of the interim nitrogen goal by 0.21 million pounds/year and just fell short of the interim phosphorus goal.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Upper Potomac basin, average annual point source nitrogen loads declined from 1.30 million pounds to 1.10 million pounds (-15%), and average annual point source phosphorus loads declined from 0.39 million pounds to 0.19 million pounds (-50%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads declined due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Upper Potomac basin, nitrogen from agriculture decreased from 6.3 million pounds to 4.5 million pounds (-28%), and phosphorus decreased from 0.49 million pounds to 0.35 million pounds (-29%). Agricultural land decreased by 10%, from an estimated 470,500 acres in 1985 to 425,300 acres in 2000. Farm animal production has also decreased from 1982 to 1997, generating 17% less nitrogen and 12% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban loads grew, even with the implementation of urban best management practices. In the Upper Potomac basin, urban acres grew 21%, from 85,300 acres in 1985 to 104,000 acres in 2000. Urban nitrogen loads increased 24%, from 1.12 million pounds to 1.39 million pounds, and urban phosphorus loads increased 25%, from 0.06 million pounds to 0.08 million pounds.

How are the loads projected to change by 2005?

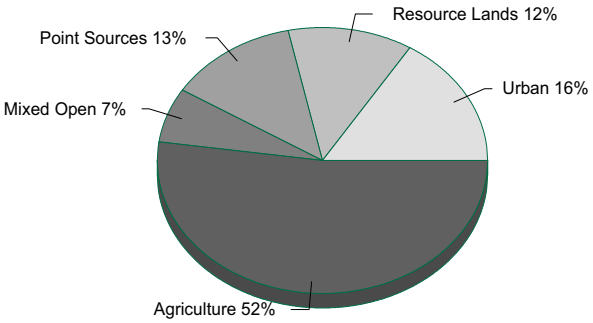
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Upper Potomac basin, the Chesapeake Bay Program projects that nitrogen loads will drop by 0.35 million pounds, or 4.10%, and phosphorus loads will grow slightly, by 0.20%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

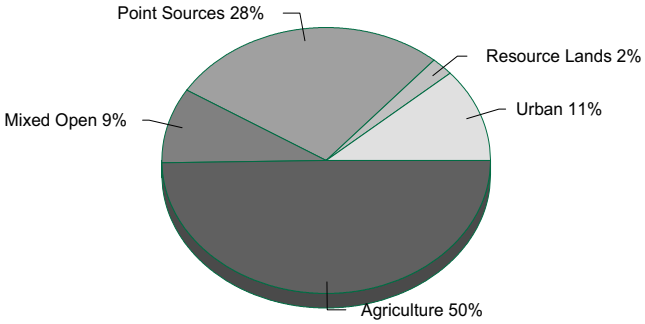
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Upper Potomac basin through 2005, reducing an estimated 0.20 million pounds of nitrogen and 0.02 million pounds of phosphorus. With these additional reductions, the Upper Potomac basin will meet its interim nitrogen goal by 2005 and will meet its interim phosphorus goal by 2005.

Upper Potoma

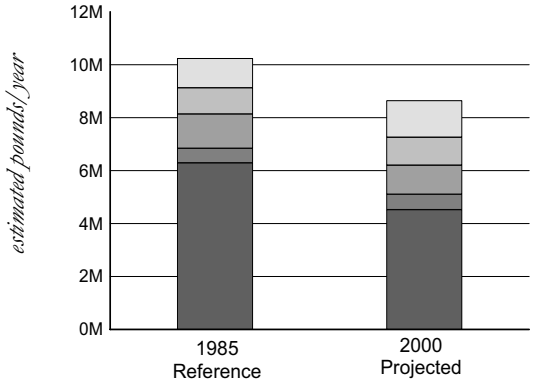
Total Nitrogen by Source, 2000



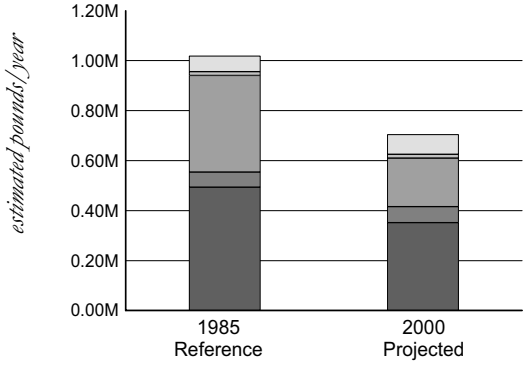
Total Phosphorus by Source, 2000



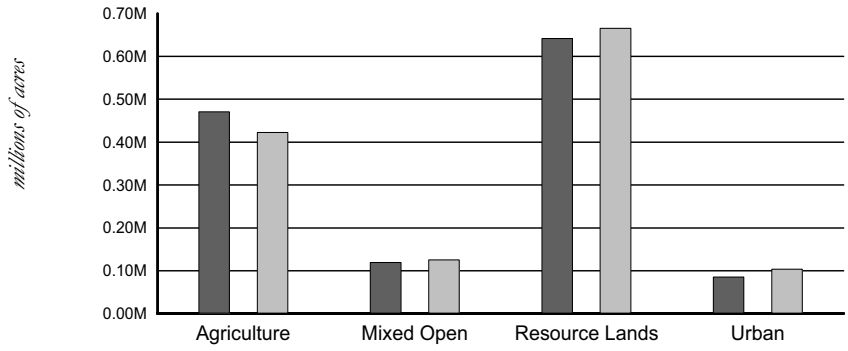
Changes in Nitrogen Loads



Changes in Phosphorus Loads



Estimated Land Use - 1985 and 2000



All data is from the Chesapeake Bay Program Phase 4.3 Watershed Model. 2000 data is projected.
"Changes in Load" charts do not include reductions from estuarine BMPs.

Upper Western Shore

What is the status of our nutrient reduction effort according to the 4.3 Watershed Model?

Using data from the Chesapeake Bay Program's Watershed Model, it is estimated that total nitrogen loads in the Upper Western Shore basin dropped from 5.4 million pounds in 1985 to 4.5 million pounds in 2000 – a 17% reduction. Total phosphorus loads in the Upper Western Shore basin dropped from 0.4 million pounds in 1985 to 0.31 million pounds in 2000 – a 23% reduction.

How does this compare to the 40% nutrient reduction goal?

Nutrient loads entering the Chesapeake Bay are estimated using a computer model called the Chesapeake Bay Watershed Model. This model changed substantially between 1993 and 2000 with the incorporation of better land use and farm animal data, improved urban runoff estimates, and longer rainfall records. Because of these improvements, the current estimated 2000 nitrogen and phosphorus loads cannot be directly compared to the original 40% nutrient loads or reduction goals set in 1995 using earlier versions of the model. While the model is improving, the changes have made measuring progress difficult.

One way to measure progress, given the difficulty of comparisons between the past and present model, is to use the latest version of the model to calculate the loads that would result if all the options in the 1995 Tributary Strategies were fully implemented. Using this methodology, Maryland's Interim Cap Workgroup reasoned that until the revised nutrient reduction goals are set in 2001 – 2002, the reductions to be achieved from the "full implementation of options listed in the 1995 Tributary Strategies" will be the "interim nutrient goal." Thus, implementation will be the benchmark for progress rather than the 1995 nutrient cap.

Were the nitrogen and phosphorus goals associated with the full implementation of the 1995 Tributary Strategies best management practices accomplished?

The interim load is defined as the load resulting from the full implementation of the 1995 Tributary Strategy options as calculated with the 4.3 Watershed Model. The Upper Western Shore fell short of the interim nitrogen goal by 0.29 million pounds/year and fell short of the interim phosphorus goal by 0.01 million pounds/year.

- **Point Sources:** Statewide, point source loads dropped due to biological nutrient removal programs at major wastewater treatment facilities and due to the implementation of the phosphate ban. In the Upper Western Shore basin, average annual point source nitrogen loads declined from 0.83 million pounds to 0.53 million pounds (-36%), and average annual point source phosphorus loads declined from 0.09 million pounds to 0.06 million pounds (-38%).

- **Agriculture:** Statewide, from 1985 to 2000, agricultural loads decreased due to the implementation of best management practices, changing land use, and a steady decline in farm animal production. In the Upper Western Shore basin, nitrogen from agriculture decreased from 2.4 million pounds to 1.6 million pounds (-34%), and phosphorus decreased from 0.15 million pounds to 0.08 million pounds (-46%). Agricultural land decreased by 18%, from an estimated 175,600 acres in 1985 to 146,300 acres in 2000. Farm animal production also decreased from 1982 to1997, generating 33% less nitrogen and 29% less phosphorus.

- **Urban:** Conversely, from 1985 to 2000, statewide urban nutrient loads grew, even with the implementation of urban best management practices. In the Upper Western Shore basin, urban acres grew 22%, from 74,900 acres in 1985 to 92,200 acres in 2000. Urban nitrogen loads increased 18%, from 1.19 million pounds to 1.41 million pounds, and urban phosphorus loads increased 17%, from 0.10 million pounds to 0.12 million pounds.

How are the loads projected to change by 2005?

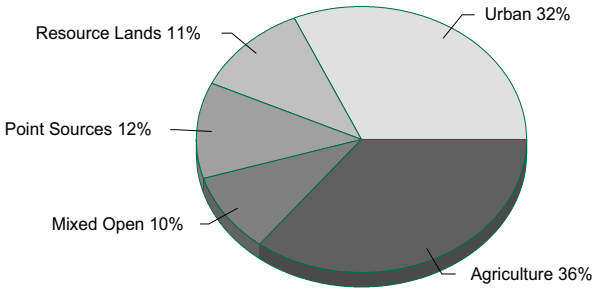
Statewide, nitrogen and phosphorus loads are expected to grow, particularly from urban sources. In the Upper Western Shore basin, the Chesapeake Bay Program projects that nitrogen loads will drop by 0.04 million pounds, or 0.90%, and phosphorus loads will grow slightly, by 1.00%, through 2005.

Will the interim nutrient goals be reached with anticipated growth in loads?

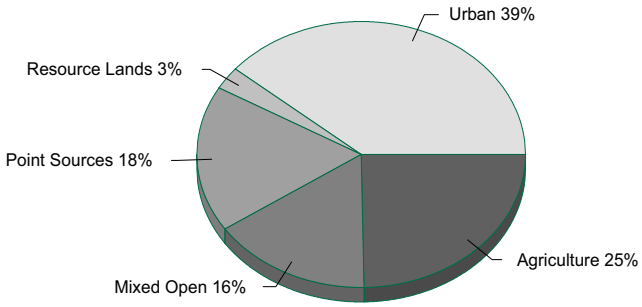
Maryland's Tracking Subcommittee has projected that additional best management practices, beyond those outlined in the original Tributary Strategies, will be implemented in the Upper Western Shore basin through 2005, reducing an estimated 0.09 million pounds of nitrogen. Phosphorus will not be reduced appreciably. These additional nutrient reduction measures, however, are not expected to make up for the anticipated growth in load; therefore, the Upper Western Shore basin is not expected to meet its interim nitrogen or phosphorus goals by 2005.

Upper Western Shor

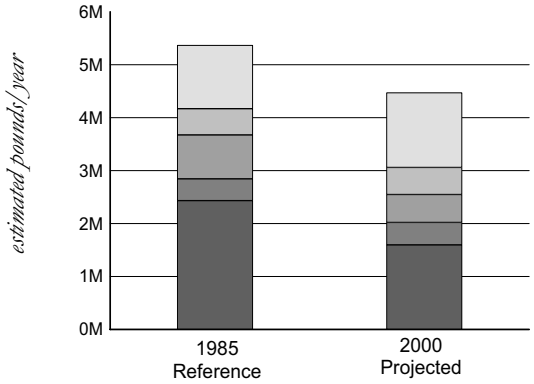
Total Nitrogen by Source, 2000



Total Phosphorus by Source, 2000



Changes in Nitrogen Loads



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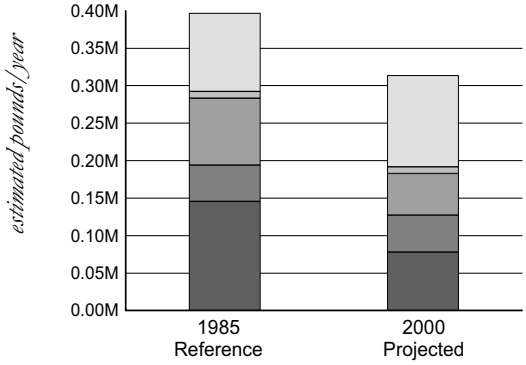

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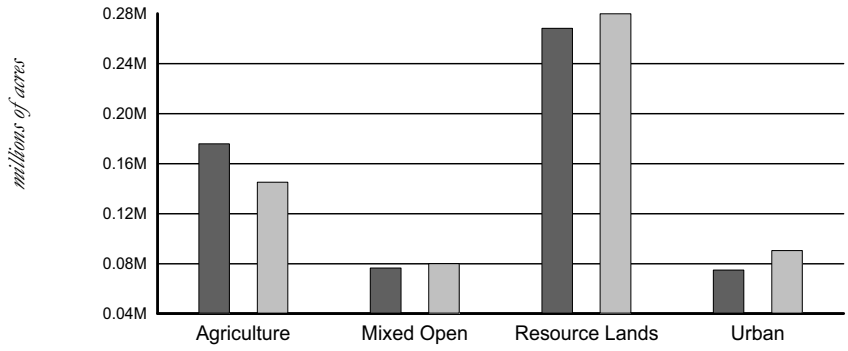

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